User Manual & Technical Specification:

Modular Switches & Crossings

LEAMS
(Lifting Equipment Asset Management System)

KOHITEK LIMITED
BUSINESS SOLUTION PROVIDER

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1. Application Overview

The Lifting Equipment Asset Management System (LEAMS) has been developed to improve the efficiency of asset control for modular switch and crossing (Modular S&C) renewals.

The application consists of multiple handheld devices and a central database with server accessible forms to maintain details of lifting and handling assets and ensure that they are correctly certified and maintained. Operators can ensure that all such assets are suitably certified before they leave the loading facility and record any issues at the time of inspection for subsequent maintenance and/or servicing.

The handheld application enables the user to scan radio frequency (RF) tags attached to the assets and obtain an instant readout on the handheld screen. The information provided will enable the operator to immediately assess the usability of each asset.

In addition, operators will be able to assign assets to renewals to build up a comprehensive listing of all assets being despatched. The information can be summarised in a report produced from the server application which can then accompany the renewal and provide interested parties with the information when required.

Terminology and lifecycle of the application:

1. Details of *primary* assets are entered into the central database. These are the SCPV “tilting wagons” to which assets will be attached.
2. Details of *secondary* assets are entered into the central database. These are the cross beams, connecting beams and any other assets which will be despatched to the renewal.
3. Details of forthcoming renewals are entered into the central database.
4. Handheld devices are synchronised with the database.
5. Operators enter details of a renewal consist into the handheld by first selecting the appropriate renewal, then scanning the first primary asset (SCPV) and then all associated secondary assets before repeating the process for the remaining primary assets.
6. When all assets have been scanned and accepted, the operator submits the renewal and synchronises the handheld with the central database.
7. An asset report is produced for the renewal and is despatched with the consist to site where it can be viewed. Additional details (e.g. a copy of the insurance certificate) can be viewed on the handheld if required.

2. Handheld Functionality

2.1 Handheld Device

The handheld application runs on M3 7200 rugged mobile devices. Each device has an RFID module capable of reading and writing RF details. The devices run the Windows Mobile 6.1 Professional operating system and have a unique device name for the purpose of synchronisation with the central database.

Each device also has a copy of Adobe Mobile Reader for viewing copies of the insurance certificates which are held on a mini SD card loaded into the top of the device.

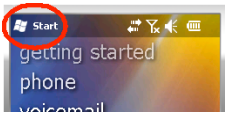
They also have Windows Office Mobile loaded together with barcode functionality, GPS, a camera module, wi-fi and 3G phone capability though these are not currently used.

The units are rated IP65 which means they are suitable for operation in dusty and wet conditions and are also 1.5m drop certified.

Starting the application

1. Turn the device on by pressing the power button. After a short delay the Windows screen will be displayed.

2. Tap on the Start button in the top left hand corner:



3. A list of programs will appear – tap on “Main Menu”.

4. This will launch the application and the main menu will be displayed.

Resetting the device

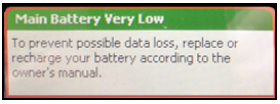
If the system hangs or begins to malfunction in anyway (e.g. the sound stops working for no apparent reason), it is most likely due to a conflict of resources within the operating system. A simple “soft” reset will normally resolve this issue and will not impact any of the data on the unit.

On the back of the unit there is a small hole marked with the word “RESET”. Use the stylus to gently push down once into the hole. The device will reboot and after a short delay will return to the normal Windows screen.

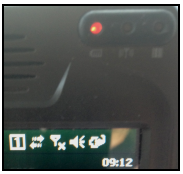
Charging the battery

The expected life of the rechargeable battery will vary dependant upon use and ambient temperature. When not in use, the power button should be pressed once to send the unit into sleep mode which will help preserve battery life. Press the power button again to wake the unit and wait approximately three seconds before the unit is ready for use.

The strength of the battery is shown in the top right hand corner of the screen. When the battery is low on charge, a warning message will be displayed and the battery indicator will have an exclamation mark next to it.



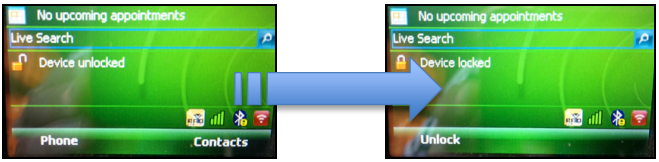
When you insert the handheld unit into the charging cradle, the battery indicator will change to show it is charging and a red light will appear at the top of the device. When charging is complete this light will become green.



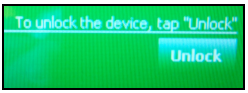
The charging cradle can simultaneously charge a spare battery which is inserted into a slot in the rear of the unit. When it is inserted a red light will appear at the bottom of the cradle which will also become green when the battery is fully charged.

Locking/Unlocking the device

The device can be locked to prevent accidental use by double tapping on the “Device unlocked” section of the main screen (note that the device can only be locked from the main screen, not from within an application).



To unlock the device, tap on “Unlock” at the bottom of the screen. A confirmation panel will appear. Click on the [Unlock] button to unlock the device.

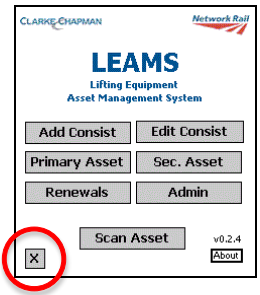


Power Saver

If the device is not used for 5 minutes, it will automatically go into sleep mode to conserve battery power. To wake the device up, press the power button. Wait approximately three seconds and then the device will be ready to use.

Exit the application

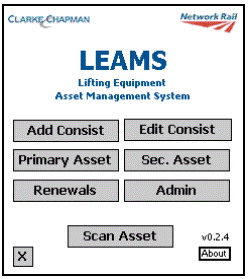
To exit the application tap on the [X] button in the bottom left corner of the main menu. This will return the device to the Windows Mobile main screen.



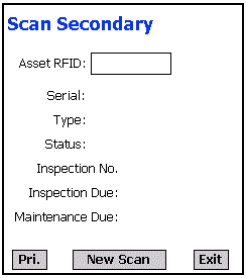
2.2 Scanning An Asset

This option is used to scan an asset and view its associated information.

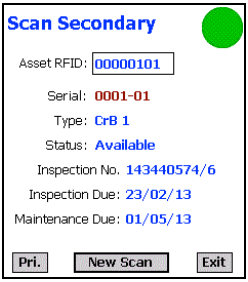
1. From the Main Menu, tap on the [Scan Asset] button.



2. When the Scan Asset screen appears, scan the asset by placing the handheld device on the RF tag and pressing the scan button. This is the top button on the right hand side of the handheld device.



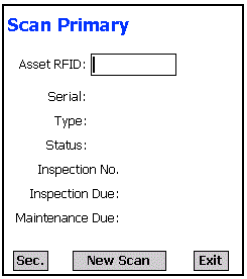
3. When the tag has been successfully scanned, you will hear a “beep” and the asset details will be displayed.



4. To scan a different asset, tap on the [New Scan] button. The screen will clear and you will be able to scan as per step 2.

5. To return to the main menu, tap on the [Exit] button.

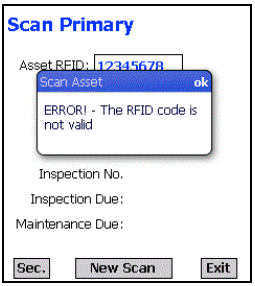
By default, the application will default to the “Scan Secondary” form. If you wish to scan a primary asset, tap on the [Pri.] button and the “Scan Primary” form will be displayed.



This functions in exactly the same way as the secondary form.

Error Condition

If you attempt to scan a primary asset whilst on the secondary form or vice-versa or details of the asset are not yet loaded into the central database you will receive an error message.

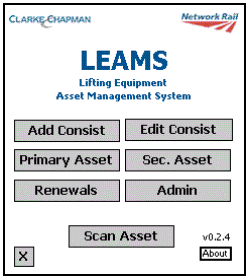


If this occurs, tap on OK to clear the message. Check you are on the correct form (“Scan Secondary” for cross beams, connecting beams etc. and “Scan Primary” for SCPV units) and/or check that details of the asset have been loaded into the server.

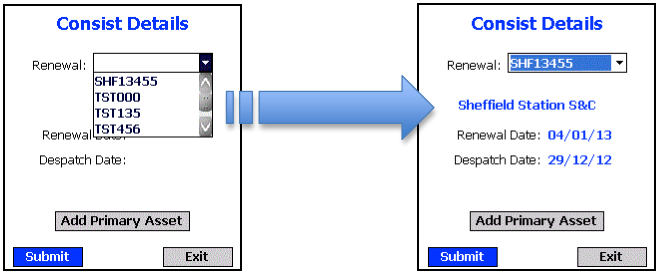
2.3 Adding A Consist

This is the primary function of the handheld application and is used to capture details of all SCPVs and their associated assets that are assigned to a specific renewal.

1. From the Main Menu, tap on the [Add Consist] button.



2. Choose a renewal by tapping on the dropdown Renewal button and tapping the relevant renewal reference number.



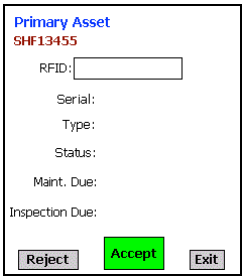
Note: only renewals with a status of *Pending* will be shown.

3. When a renewal has been selected, associated information about its renewal date and despatch date will be displayed together with a description of the renewal. Check this is the correct renewal and then tap the [Add Primary Asset] button to continue. To change the renewal, simply choose a different one from the dropdown list.

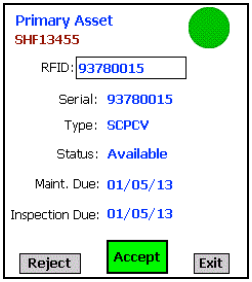
   To return to the main menu tap on the [Exit] button.

   The [Submit] button will be covered later in this section.

4. When you tap the [Add Primary Asset] button, the Primary Asset screen is displayed. Scan the first SCPV in the consist. Place the handheld device against the RF tag and press the scan button. This is the top button on the right hand side of the handheld device.



5. When the tag has been successfully scanned, you will hear a “beep” and the SCPV number will be shown in the “RFID” field together with associated information for the asset.

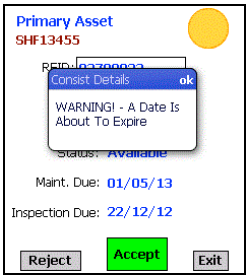


6. Check the details and if they are correct, tap the [Accept] button to save this SCPV and begin entering the secondary assets that are installed on it.

Error Condition

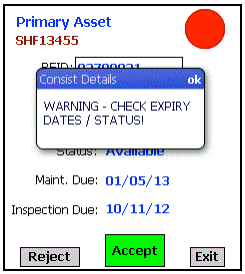
If the unit cannot detect an RF tag, it will display an error message in the RFID field (“no tag in field” or “CSC collision error”). If this happens, simply tap the [Reject] button to clear the message and try again. The handheld device will need to be located close to the tag to get a good signal. The RFID modular is housed on the back of the unit near the camera lens at the top.

7. If the SCPV has a inspection due date or maintenance due date that fall within the next 28 days, a different “beep” will be heard and an orange visual warning will be displayed together with a warning message.



Tap OK to clear the message. A decision then needs to be made whether to proceed with this asset by tapping the [Accept] button or to change it by tapping the [Reject] button.

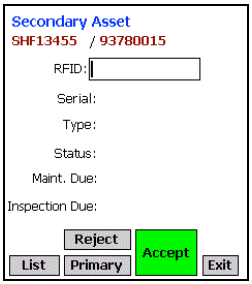
8. If the SCPV has an inspection due date or maintenance due date that has passed or falls within the next 7 days OR it has a status that is not set to “Available” a red light will be displayed with a corresponding warning message.



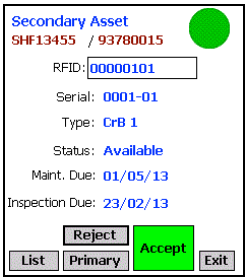
Tap OK to acknowledge the message. As with an orange warning, a decision will need to be taken on whether or not to accept or reject the asset.

If either a Red or Orange warning light is shown, you MUST check that the SCPV is suitable for use prior to signing off the consist.

9. When a primary asset is accepted, the secondary asset form is displayed. Scan the first secondary asset Ensure the handheld device is located near the RF tag when attempting to scan.



10. As with primary assets, a successful scan will populate the RFID field with the asset number and the associated information will be displayed.



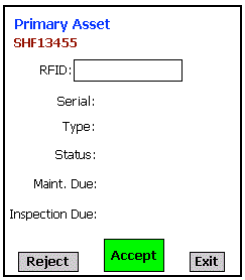
11. Check that the details are correct and tap the [Accept] button. The details are saved and the screen is cleared ready to scan the next asset.

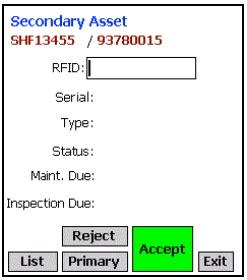
    Continue this process until all assets for this SCPV have been accepted.

12. As with primary assets, if a date has expired or is about to expire, you will be advised with a warning message and either an orange or red warning light.

If an Orange or Red warning light is displayed you MUST check that the asset is suitable for use prior to signing off the consist.

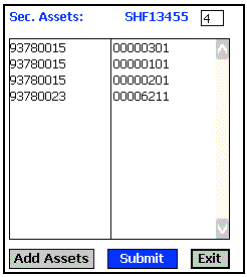
13. When all assets for the first SCPV have been accepted, the process can be repeated by tapping on the [Primary] button. Scan the next SCPV, accept if appropriate and then scan all associated secondary assets as previously described.





14. Continue this process for each SCPV within the consist.

    When all assets have been scanned, tap on the [List] button. This will list all secondary assets that have been scanned for this renewal sorted by SCPV. The total number of secondary assets is also displayed.



15. To add more assets to the consist, tap on the [Add Assets] button and you will be taken to the Primary Asset form (step 4).

    When all assets have been added, tap on the [Submit] button. This will complete the process and update the renewal status to “Complete’. No further assets can be added.

    Alternatively tap on exit to return to the main menu if you do not want to submit the consist at this stage. To submit at a later stage, select “Add Consist” from the main menu. Choose the relevant renewal as shown in step 2 and then tap on the [Submit] button.

    To replace or delete an existing asset, tap on [Edit Consist] from the main menu and follow the instructions in section 2.5.

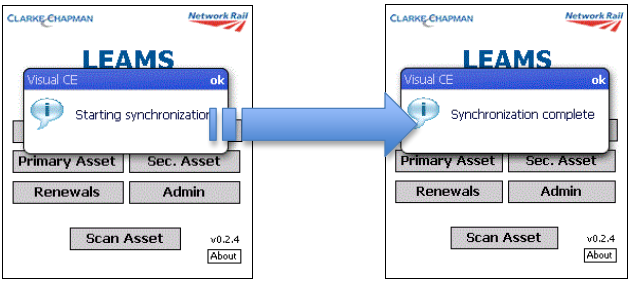
2.4 Synchronising

When all details of a consist have been scanned into the handheld, the unit will need to be synchronised with the central database. This will download the consist details and also upload any changes that may have been made to the asset and renewal information.

To synchronise, insert the handheld device into it's charging cradle.

Once inserted, the handheld will carry out an initial *handshake* with the server to verify that there is a good connection. After a few seconds, it will then begin the synchronisation process.

A message will appear on both the server and the handheld confirming that synchronisation is in progress and a completion message will also be displayed on the handheld at the end of the process (tap on OK to remove these messages at the end of the synchronisation process).



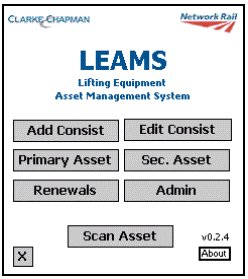
DO NOT REMOVE THE HANDHELD DEVICE FROM THE CRADLE DURING THE SYNCHRONISATION PROCESS OR DATA CORRUPTION MAY OCCUR.

At the end of the synchronisation process, the handheld unit can be left in the cradle where it will top up its battery charge ready for next use.

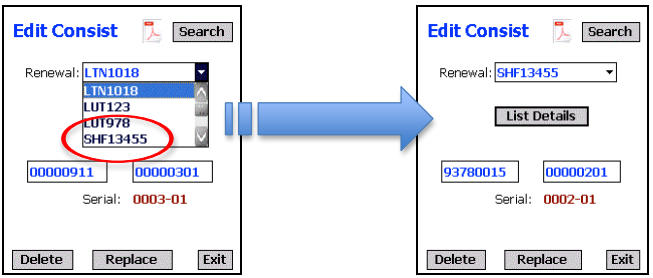
2.5 Editing A Consist

Use this function to delete or replace assets from an existing consist.

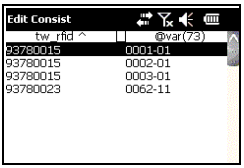
1. From the Main Menu, tap on the [Edit Consist] button.



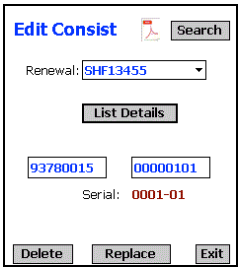
2. By default the last saved transaction will be displayed. Choose the renewal that contains the asset information you wish to change by tapping on the dropdown Renewal button and tapping the relevant renewal reference number.



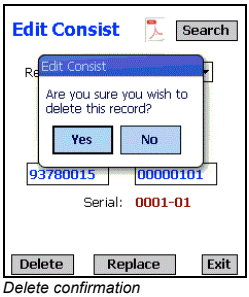
3. Tap on the [List Details] button and all the assets for this renewal will be displayed. Use the scroll bars to find the relevant asset. Tap on the column header to sort the asset details if required (*tw_rfid* = primary assets, *@var(73)* = secondary assets).



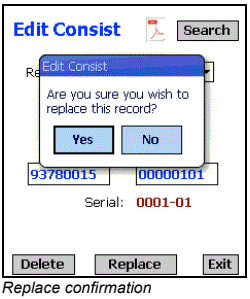
4. Double tap the relevant asset record to return to the Edit Asset screen.



5. Confirm that this is the record you wish to amend. Press the [Delete] or [Replace] button as required and a confirmation message will be displayed.



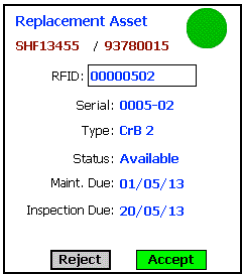
Delete confirmation



Replace confirmation

6. Tap [Yes] or [No] accordingly. If the record is being deleted, the application will return to the main menu and confirm that the record has been successfully deleted. If the record is being replaced a message will be displayed confirming that the old record has been deleted and that details of the replacement asset should be entered. Tap OK to continue.

7. Scan the replacement secondary asset. The process will be the same as adding assets to a new consist. A visual and audible system will be used to confirm whether the asset is suitable. A green light indicates the asset status and all dates and within limits whilst orange and red lights indicate that attention is required to ensure the asset is suitable for use.



8. Accept or reject the new asset accordingly. Tapping [Reject] will clear the screen of the previous asset information and a new asset can be scanned. Tapping [Accept] will update the renewal with the new asset information. A confirmation message will then be displayed. Tap OK to return to the main menu.

View Secondary Asset Insurance Certificates

Within the Edit Consist form, the PDF copy of an assets insurance certificate can also be viewed. Follow steps 1-4 to locate the relevant asset record and then click on the Adobe Reader icon which will launch the Adobe application and display the corresponding certificate.

Search Facility

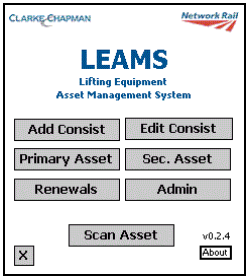
In addition to locating an asset using the [List] button as described in step 3, it is also possible to search for the asset by tapping the [Search] button. Enter the asset number and tap OK. The first record corresponding to this number will then be displayed.

2.6 Data Maintenance

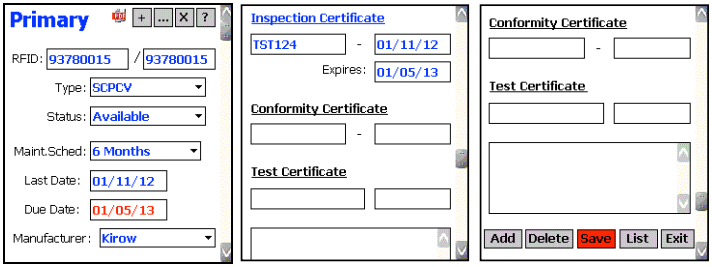
Whilst details of static records (e.g. primary and secondary assets, renewals etc.) will normally be maintained via the server application, it is possible to maintain them via the handheld. This information will then update the central database on the server during the synchronisation process.

Primary and Secondary Assets

1. From the Main Menu, tap either the [Primary Asset] or [Sec. Asset] button as required. The following instructions show the Primary form but the structure is the same for both.



2. Details of the last record in the database will be displayed.



Locate A Record

To search for a particular record, either tap on the search button [?] on the top of the screen and enter details of the asset or list the records by tapping the […] button at the top of the screen or the [List] button at the bottom of the screen. Scroll through the records to locate the relevant item. Double tap the record and the details will be displayed.

Modify A Record

Once a record has been located, the details can be updated by tapping in the relevant field and entering the required details. Tap on the [Save] button at the bottom of the screen to confirm the changes.

Add A Record

To add a record tap on the [+] button at the top of the screen or the [Add] button at the bottom. Enter the required details and then tap on the [Save] button to confirm.

Delete A Record

To delete a record tap on the [Delete] button at the bottom of the screen. A warning message will appear. Tap YES if you wish to proceed or NO to return to the record screen. Tapping YES will delete the record and a confirmation message will appear. Tap OK to continue.

Exit

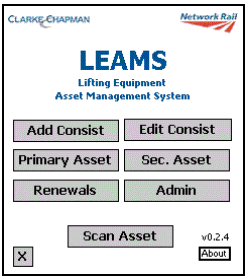
To exit this form without making any changes tap on the [X] button at the top of the screen of the [Exit] button at the bottom. The form will close and return to the main menu.

Asset Insurance Certificate

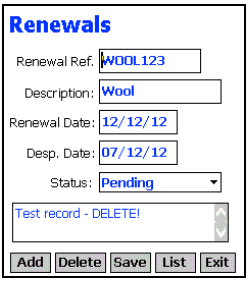
Locate the relevant asset record as detailed above and then click on the Adobe Reader icon which will launch the Adobe application and display the corresponding certificate.

Renewals

1. From the Main Menu, tap the [Renewals] button.



2. Details of the last renewal record in the database will be displayed.



Locate A Record

To locate a renewal record, tap on the [List] button and scroll through the records. Double tap on the relevant record and the corresponding details will be displayed.

Modify A Record

Once a record has been located, tap in the relevant field and enter the required details. Tap on the [Save] button to confirm the changes.

Add A Record

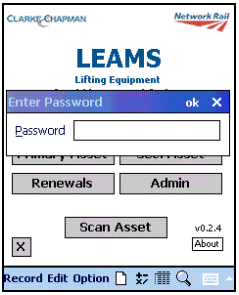
To add a record tap on the [Add], enter the required details and tap the [Save] button to confirm.

Delete A Record

Tap the [Delete] button. A warning message will appear. Tap YES if you wish to proceed or NO to return to the record screen. Tapping YES will delete the record and a confirmation message will appear. Tap OK to continue.

2.7 Administrative Functions

This form enables support staff to view details of the transactions that reside on the internal tables within the handheld application. It also displays the handheld application control menu which is hidden on all other forms. This allows users to bypass much of the control validation that is used within the application. For this reason and the fact that it is possible to delete records the form is password protected.



The password is: leams

Subject to entry of the correct password, the Admin form will be displayed.

For further information on how to use this form contact the support team.

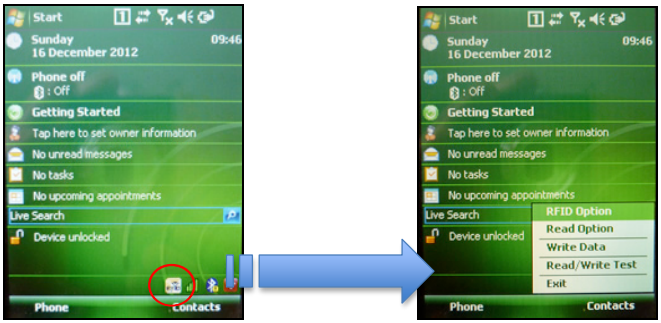
2.8 Using the RFID Module

The RFID module is located in the upper back of the M3 handheld device. It is capable of reading and writing radio frequency codes to the RF tags that are attached to the designated assets.

Each device contains an RFID application that enables the module to be configured and provides the necessary read and write capability. This application is external to LEAMS and must be run from the main Windows Mobile screen.

Writing a new RFID code

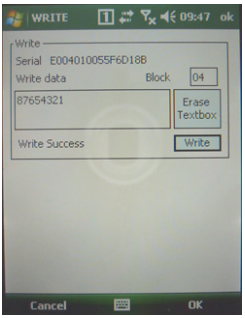
1. Tap the RFID logo in the bottom right hand corner of the main Windows Mobile screen to open the RFID menu.



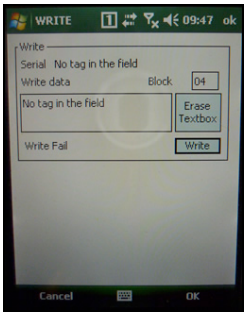
2. Tap the "Write Data" option. The cursor should be flashing in the Write Data box. If it isn't tap in the box and then enter the RFID code as required. The code MUST be numeric and 8 digits long.

   The format that has been adopted for the LEAMS application has been to use the serial number preceded with leading zeros e.g. a serial number of 0001-01 has been coded as 00000101.

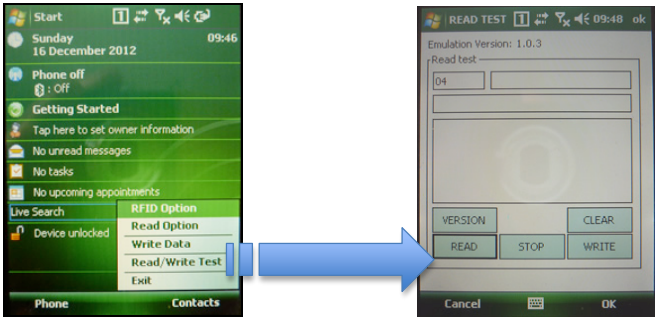
3. Place the handheld device on top of the tag so that the RFID module is positioned above it. Tap on the [Write] button. The designated code will be written to the tag and a confirmation message will be displayed.



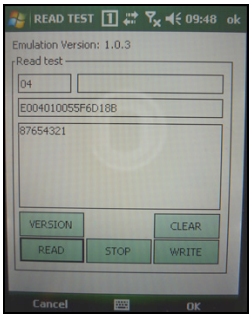
4. If the handheld device is not positioned correctly or the tag is faulty an error message will be displayed. Tap the [Erase Textbox] button to clear the screen and retry. If the problem continues, try using a different tag.



5. To verify an RFID code, tap the “Read/Write Test” option from the RFID menu.



6. Place the handheld device on top of the tag so that the RFID module is positioned above it. Tap on the [Read] button. The device will attempt to read the RF code and display it accordingly.



7. If the device is unable to read the tag successfully an error message will be displayed. Tap the [Clear] button and retry. If the device is still unable to read the code, it will need to be rewritten to the tag or a new tag will need to be used.

3. Server Functionality

3.1 Overview

The server application has been developed in Microsoft Access 2003. It consists of a central database containing the data tables along with a number of forms, queries and reports.

Starting the application

Either click on the LEAMS icon on the desktop or click on Start / Programs / LEAMS.

The main menu will be displayed from where you can select an option by clicking on the relevant button.

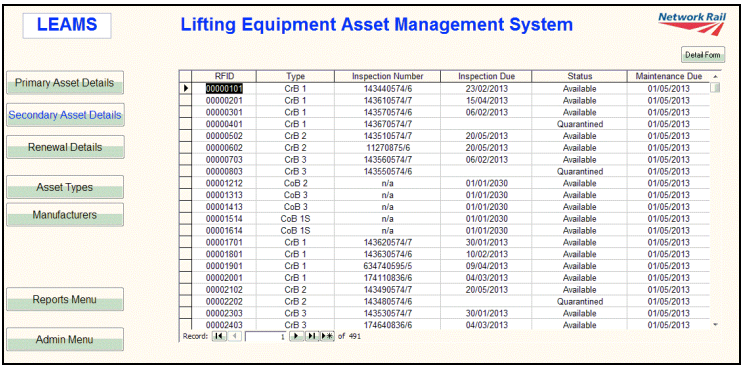
To exit the application select File / Exit or close the window.

3.2 Maintaining Asset Details – Primary & Secondary

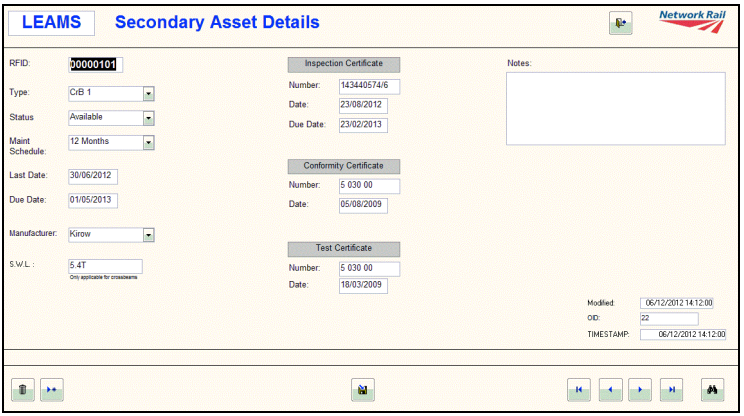
The screen layouts and process for maintaining primary and secondary assets is identical.

Viewing Asset Information

Click on either the [Primary Asset Details] or [Secondary Asset Details] button to view a list of all records held in the database.



To look in more detail at a particular record, ensure the record is highlighted by placing the cursor in the appropriate row and then click on the [Detail Form] button in the top right hand corner.



To exit this screen and return to the record listing, click on the exit button

The other buttons at the bottom of the Detail Form provide the following functionality:

Delete the current record

Add a new record

Save the current record

Go to the first record in the database

Go to the previous record

Go to the next record

Go to the last record in the database

Find a specific record

Note: when the [Find] button is clicked, a new window will open where search criteria can be entered. An asterisk (*) can be used as a wildcard to help locate records if required.

Updating Asset Details

Asset details can be updated by simply typing in the new value within the default list view. The updates will automatically be saved when the cursor exits the current record. Alternatively the updates can be made on the Detail Form and will be saved when user either exits the form back to the list view or clicks on the [Save] button.

Note: There is an update function within the Admin Menu that will automatically update secondary asset records based on information from the Zurich Crimson system. This is covered in chapter 3.6.

Adding New Assets

New assets can be added to the database by scrolling down to the bottom of the list view and typing in details of the new record in the space provided. Details of the new record will automatically be saved when the cursor exits the new row.

Additional information for the new asset can be added via the Detail Form.

Deleting Assets

It is not recommended that assets are deleted. Whilst an asset may no longer be in use, it may be required within the database for historical purposes (e.g. to enable some statistical reports to work correctly). In this instance the status of an asset should be set to *Decommissioned* which will show that it is no longer available for use.

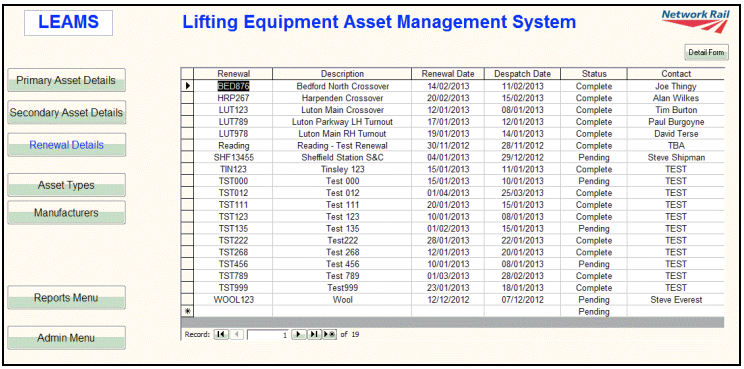
If an asset does need to be deleted from the database, enter the Detail Form for the appropriate record and click on the [Delete] button.

3.3 Maintaining Renewal Details

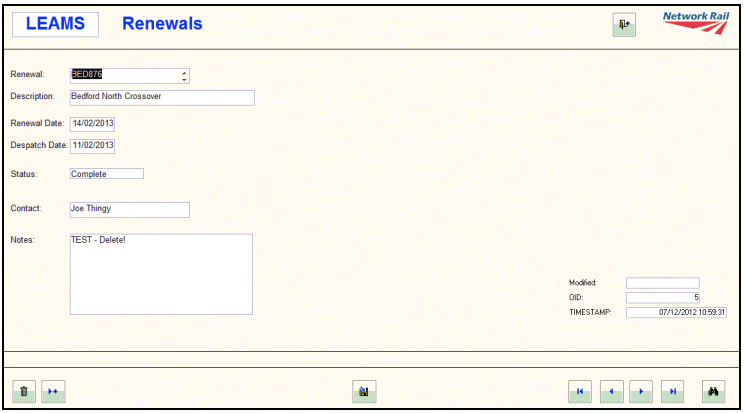
Renewal information is required for each consist as it provides the basic element to which primary and secondary assets are assigned.

Viewing Renewal Information

Click on the [Renewal Details] button to view a list of all renewal records held in the database.


LEAMS
Lifting Equipment Asset Management System
Network Rail
Detail Form
Primary Asset Details
Secondary Asset Details
Renewal Details
Asset Types
Manufacturers
Reports Menu
Admin Menu
Renewal | Description | Renewal Date | Despatch Date | Status | Contact
BED876 | Bedford North Crossover | 14/02/2013 | 11/02/2013 | Complete | Joe Thingy
HRP267 | Harpenden Crossover | 20/02/2013 | 15/02/2013 | Complete | Alan Wilkes
LUT123 | Luton Main Crossover | 12/01/2013 | 08/01/2013 | Complete | Tim Burton
LUT789 | Luton Parkway LH Turnout | 17/01/2013 | 12/01/2013 | Complete | Paul Burgoyne
LUT978 | Luton Main RH Turnout | 19/01/2013 | 14/01/2013 | Complete | David Terse
Reading | Reading - Test Renewal | 30/11/2012 | 28/11/2012 | Complete | TBA
SHF13455 | Sheffield Station S&C | 04/01/2013 | 29/12/2012 | Pending | Steve Shipman
TIN123 | Tinsley 123 | 15/01/2013 | 11/01/2013 | Complete | TEST
TST000 | Test 000 | 15/01/2013 | 10/01/2013 | Pending | TEST
TST012 | Test 012 | 01/04/2013 | 25/03/2013 | Complete | TEST
TST111 | Test 111 | 20/01/2013 | 15/01/2013 | Complete | TEST
TST123 | Test 123 | 10/01/2013 | 08/01/2013 | Complete | TEST
TST135 | Test 135 | 01/02/2013 | 15/01/2013 | Pending | TEST
TST222 | Test222 | 28/01/2013 | 22/01/2013 | Complete | TEST
TST268 | Test 268 | 12/01/2013 | 20/01/2013 | Complete | TEST
TST456 | Test 456 | 10/01/2013 | 08/01/2013 | Pending | TEST
TST789 | Test 789 | 01/03/2013 | 28/02/2013 | Complete | TEST
TST999 | Test999 | 23/01/2013 | 18/01/2013 | Complete | TEST
WOOL123 | Wool | 12/12/2012 | 07/12/2012 | Pending | Steve Everest
Pending
Record: 1 of 19

To look in more detail at a particular record, ensure the record is highlighted by placing the cursor in the appropriate row and then click on the [Detail Form] button in the top right hand corner.



To exit this screen and return to the record listing, click on the exit button

Adding New Renewals

New renewals can be added to the database by scrolling down to the bottom of the list view and typing in details of the new record in the space provided. Details of the new record will automatically be saved when the cursor exits the new row.

Additional information for the new renewal can be added via the Detail Form.

Updating Renewal Details

Renewal details can be updated by simply typing in the new value within the default list view. The updates will automatically be saved when the cursor exits the current record. Alternatively the updates can be made on the Detail Form and will be saved when user either exits the form back to the list view or clicks on the [Save] button.

Deleting Renewal Records

It is not recommended that renewal records are deleted. Whilst they may no longer be in use, they may be required within the database for historical purposes (e.g. to enable some statistical reports to work correctly). In this instance the status of a renewal should be set to *Complete* which will show that it is no longer available for use.

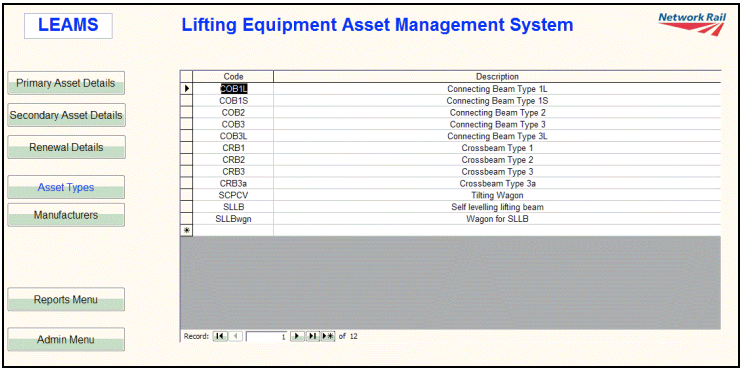
If a renewal record does need to be deleted from the database, enter the Detail Form for the appropriate record and click on the [Delete] button.

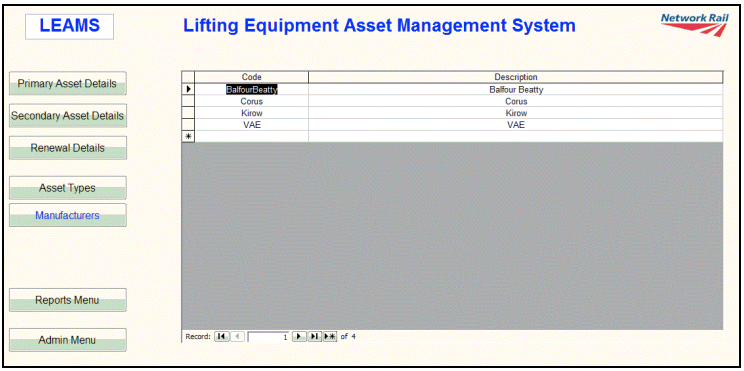
3.4 Data Maintenance – Asset Types & Manufacturers

These two data elements can be maintained via the server application. They are used by the primary and secondary asset forms to ensure data is kept up-to-date.

Viewing Record Information

Click on either the [Asset Types] or [Manufacturers] button to view a list of the records in the database.





Adding New Records

New records can be added to the database by scrolling down to the bottom of the list view and typing in details of the new record in the space provided. Details of the new record will automatically be saved when the cursor exits the new row.

Updating Record Details

Details can be updated by simply typing in the new value within the default list view. The updates will automatically be saved when the cursor exits the current record.

Deleting Records

It is not recommended that records are deleted. Whilst they may no longer be in use, they may be required within the database for historical purposes (e.g. to enable some statistical reports to work correctly).

3.5 Reports

Click on the [Reports] button to open the Reports form. Currently there are four reports available.

LEAMS
Lifting Equipment Asset Management System
Network Rail
Primary Asset Details
Secondary Asset Details
Renewal Details
Asset Types
Manufacturers
Reports Menu
Admin Menu
Reports Menu
Consist Listing - CrB only
Lists secondary assets grouped by their primary assignment for a selected renewal:
Consist Listing - All Assets
Lists secondary assets grouped by their primary assignment for a selected renewal:
Total Asset Assignment
Lists secondary assets grouped by their primary assignment for ALL renewals.
CrB Inspection Assessment
Displays all CrB assets with an inspection due date greater than today plus a specified number of days.

Consist Listing – CrB only

This will produce a report that lists all crossbeams that are currently assigned to the specified renewal. Choose a renewal from the associated dropdown box.

Consist Listing – All Assets

This will produce a report that lists all assets that are currently assigned to the specified renewal. Choose a renewal from the associated dropdown box.

Total Asset Assignment

This will produce a report that lists all assets for all renewals. It provides both current and historical information.

CrB Inspection Assessment

This will produce a report that lists all crossbeams that have an inspection due date greater than todays date plus a specified number of days. When this report is selected, a new window will pop up prompting the user to enter the number of days required.

All reports will run in preview mode and be displayed on screen. They can then be either saved or sent to the printer as required.

3.5 Administrative Functions

The administrative menu performs two functions. The first is to enable users to view the transaction records that have been generated. This information may be required by support personnel in the event of a system issue. The data in the fields is locked and cannot be changed.

The second function is to allow secondary assets to be updated based on information from the Zurich Crimson system.

Updating Secondary Assets

The update routine is a two stage process. First a spreadsheet is generated within the Crimson system and saved on the server. Second the update function is selected within the LEAMS application which will interrogate the Crimson data and update records accordingly.

Using the assets serial number, the following information will be updated:

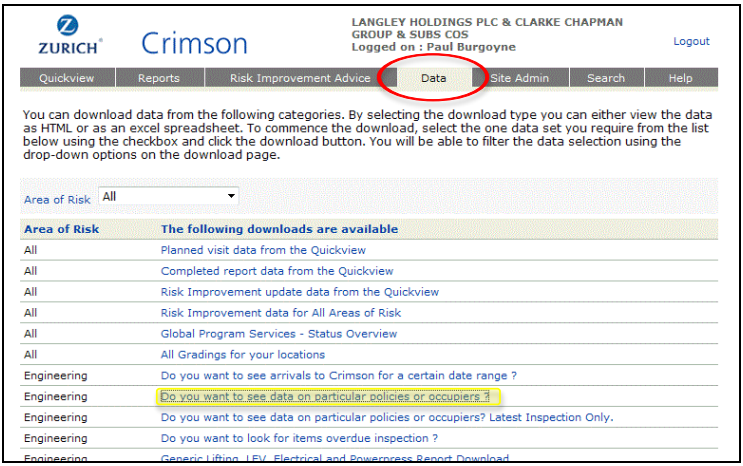
Inspection Report number – derived from the Report Number and Version columns

Last Inspection Date – derived from the Last Inspection Date column

Next Inspection Date – derived from the Latest Date of Next Examination column

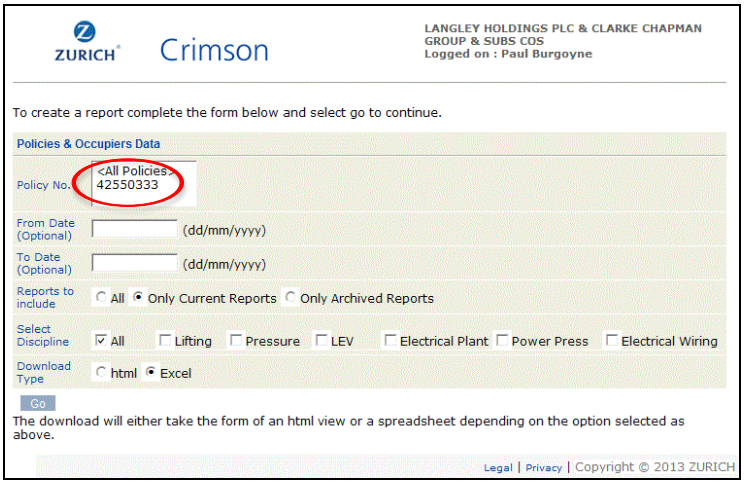
In addition, the *modified* and *TIMESTAMP* fields are updated to ensure the handheld application is correctly synchronised.

1. Log on to the Crimson system. From the main menu, click on the *Data* option.

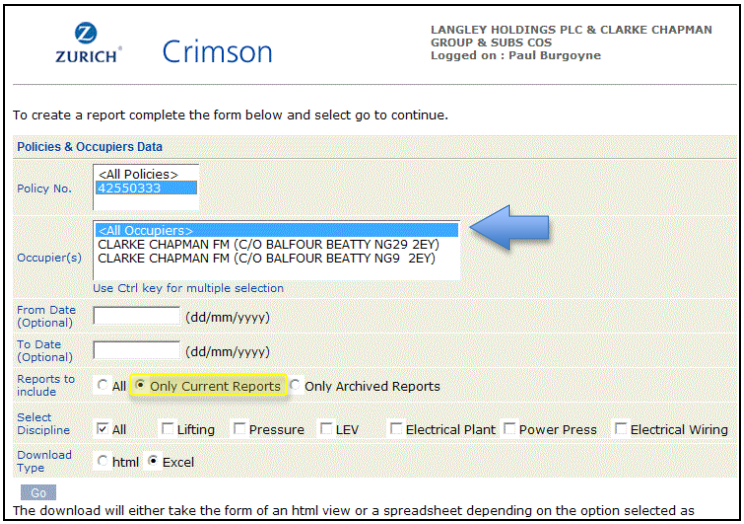

ZURICH
Crimson
LANGLEY HOLDINGS PLC & CLARKE CHAPMAN GROUP & SUBS COS
Logged on : Paul Burgoyne
Logout
Quickview
Reports
Risk Improvement Advice
Data
Site Admin
Search
Help
You can download data from the following categories. By selecting the download type you can either view the data as HTML or as an excel spreadsheet. To commence the download, select the one data set you require from the list below using the checkbox and click the download button. You will be able to filter the data selection using the drop-down options on the download page.
Area of Risk
All
Area of Risk
The following downloads are available
All
Planned visit data from the Quickview
All
Completed report data from the Quickview
All
Risk Improvement update data from the Quickview
All
Risk Improvement data for All Areas of Risk
All
Global Program Services - Status Overview
All
All Gradings for your locations
Engineering
Do you want to see arrivals to Crimson for a certain date range ?
Engineering
Do you want to see data on particular policies or occupiers ?
Engineering
Do you want to see data on particular policies or occupiers? Latest Inspection Only.
Engineering
Do you want to look for items overdue inspection ?

2. Click on the option “Do you want to see data on particular policies or occupiers?” in the **Engineering** *Area of Risk* section.

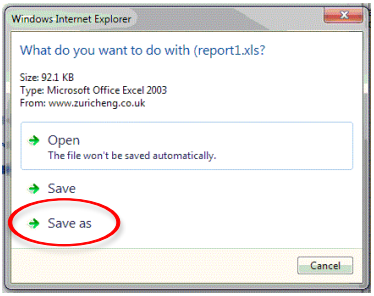
3. A new window will pop up. Click on the policy number.



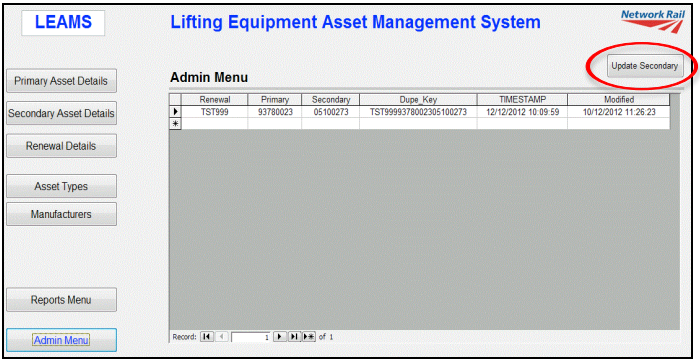
4. Check that *<All Occupiers>* is highlighted and that *Only Current Reports* is selected. Click on the [Go] button.



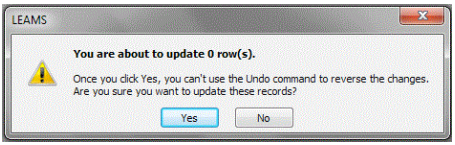
5. Click on the *Save as* option. The file MUST be saved in the same location with the same filename as the database will use these parameters during the update routine.



6. Access the LEAMS application and click on the [Admin Menu] button. Click on the [Update Secondary] button to initiate the update procedure.



7. A confirmation message will appear confirming how many records will be updated. If there are no records to update, zero will be shown.


LEAMS
You are about to update 0 row(s).
Once you click Yes, you can't use the Undo command to reverse the changes.
Are you sure you want to update these records?
Yes
No

8. Click on the [Yes] button to complete the update.

4. Technical Specification – Handheld Application

4.1 Database Specification

The LEAMS database is developed in Microsoft Access. It comprises ten tables, eight of which contain static data for the application, one which holds transaction details and one which is used by the handheld application for synchronisation.

Table Names

1.1 leams_assetdetails - assets that will be tracked in the system
1.2 leams_assetsstatus - status of assets e.g. quarantined
1.3 leams_assettypes - different types of asset that are available
1.4 leams_maintenanceschedule - frequency of asset maintenance
1.5 leams_manufacturer - asset manufacturers
1.6 leams_primarydetails - SCPVs that assets will belong to
1.7 leams_renewaldetails - renewals that will be tracked in the system
1.8 leams_renewalstatus - status of renewals – e.g. active
1.9 leams_transactiondetails - transactions held at asset level per renewal
1.10 SYWARE_SyncInfo - used by the handheld app for synchronisation

Key fields
The following fields are present on all the application tables and are critical to ensure all handhelds and the server application remain in synch:

OID - This is a unique reference number generated by the handheld. When a record is created outside of the handheld application (e.g. on the server), this field must be left blank (or zero). Each handheld will then be aware of the need to add this value to their own internal tables and will update the OID field accordingly during the synchronisation process.

modified - Holds a date/time reference of when the record was last updated. This will be the date/time the record was created if no further updates have been applied.

TIMESTAMP - Used by the handheld application to determine whether a record has been created or modified externally. External applications (e.g. the server) MUST update this field for all updates (new records and modifications) otherwise the synchronisation process will fail to identify a record has been inserted or changed. Each handheld will interrogate this field during synchronisation to determine which fields need to be updated.

4.1.1 Asset Details – leams_assetdetails

Field Name	Description	Type	Notes
OID	Unique reference supplied by VCE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
asset_rfid	The RFID tag number of the asset.	Text	PRIMARY KEY
type	The type of asset.	Text	
inspection_no	The inspection certificate number.	Text	
last_insp_date	The date the asset was last inspected.	Date/Time	Format DD/MM/YYYY
insp_due_date	When the next inspection is due.	Date/Time	Format DD/MM/YYYY
insp_cert_img	Not used	OLE	
status	The current status of the asset.	Text	
serial	The serial number that is on the physical asset tag.	Text	
primary_asset	Not used	Text	
safe_working_load	Holds the SWT (where applicable).	Text	
manufacturer	The manufacturer of the asset.	Text	
maint_sched	The maintenance schedule for the asset.	Text	
last_maint_date	The date of last maintenance.	Date/Time	Format DD/MM/YYYY
maint_due_date	The date of next maintenance.	Date/Time	Format DD/MM/YYYY
maint_checklist_img	Not used	OLE	
update_user	Not used	Text	
confcert_no	The reference number of the Conformity Certificate.	Text	
confcert_date	The expiry date of the Conformity Certificate.	Date/Time	Format DD/MM/YYYY
confcert_img	Not used	OLE	
testcert_no	The reference number of the Test Certificate.	Text	
testcert_date	The expiry date of the Test Certificate.	Date/Time	Format DD/MM/YYYY
testcert_img	Not used	OLE	
asset_notes	Associated notes.	Memo	
modified	Date/time the record was last updated.	Date/Time	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Date/Time	Format DD/MM/YYYY HH:MM:SS Must be populated if record generated outside of VCE.

4.1.2 Asset Status – leams_assetstatus

Field Name	Description	Type	Notes
OID	Unique reference supplied by Visual CE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
code	A unique code for this record.	Text	PRIMARY KEY
description	A description of the code.	Text	
update_user	Not used	Text	
modified	Date/time the record was last updated.	Date/Time	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Date/Time	Format DD/MM/YYYY HH:MM:SS Must be populated if record generated outside of VCE.

4.1.3 Asset Types – leams_assettypes

Field Name	Description	Type	Notes
OID	Unique reference supplied by Visual CE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
code	A unique code for this record.	Text	PRIMARY KEY
description	A description of the code.	Text	
update_user	Not used	Text	
modified	Date/time the record was last updated.	Date/Time	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Date/Time	Format DD/MM/YYYY HH:MM:SS Must be populated if record generated outside of VCE.

4.1.4 Maintenance Schedules – leams_maintenanceschedule

Field Name	Description	Type	Notes
OID	Unique reference supplied by Visual CE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
code	A unique code for this record.	Text	PRIMARY KEY
valuecalc	The number of days between maintenance checks.	Number	
update_user	Not used	Text	
modified	Date/time the record was last updated.	Date/Time	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Date/Time	Format DD/MM/YYYY HH:MM:SS Must be populated if record generated outside of VCE.

4.1.5 Manufacturers – leams_manufacturer

Field Name	Description	Type	Notes
OID	Unique reference supplied by Visual CE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
code	A unique code for this record.	Text	PRIMARY KEY
description	A description of the code.	Text	
update_user	Not used	Text	
modified	Date/time the record was last updated.	Date/Time	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Date/Time	Format DD/MM/YYYY HH:MM:SS Must be populated if record generated outside of VCE.

4.1.6 SCPVs – leams_primarydetails

Field Name	Description	Type	Notes
OID	Unique reference supplied by VCE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
tw_rfid	The RFID tag number of the SCPV.	Text	PRIMARY KEY
type	The type of asset.	Text	Defaults to SCPV
inspection_no	The inspection certificate number.	Text	
last_insp_date	The date the asset was last inspected.	Date/Time	Format DD/MM/YYYY
insp_due_date	When the next inspection is due.	Date/Time	Format DD/MM/YYYY
insp_cert_img	Not used	OLE	
status	The current status of the asset.	Text	
serial	The physical tag number.	Text	
renewal	Not used	Text	
manufacturer	The manufacturer of the asset.	Text	
maint_sched	The maintenance schedule for the asset.	Text	
last_maint_date	The date of last maintenance.	Date/Time	Format DD/MM/YYYY
maint_due_date	The date of next maintenance.	Date/Time	Format DD/MM/YYYY
maint_checklist_img	Not used	OLE	
update_user	Not used	Text	
confcert_no	The reference number of the Conformity Certificate.	Text	
confcert_date	The expiry date of the Conformity Certificate.	Date/Time	Format DD/MM/YYYY
confcert_img	Not used	OLE	
testcert_no	The reference number of the Test Certificate.	Text	
testcert_date	The expiry date of the Test Certificate.	Date/Time	Format DD/MM/YYYY
testcert_img	Not used	OLE	
asset_notes	Associated notes.	Memo	
modified	Date/time the record was last updated.	Format DD/MM/YYYY HH:MM:SS	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Must be populated if record generated outside of VCE.	Must be populated if record generated outside of VCE.

4.1.7 Renewals – leams_renewaldetails

Field Name	Description	Type	Notes
OID	Unique reference supplied by VCE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
renewal	The unique reference number for a renewal.	Text	PRIMARY KEY
description	A description of the renewal.	Text	
contractor	Not used	Text	
renewaldate	The date of the renewal.	Date/Time	Format DD/MM/YYYY
despatchdate	The date when the consist will be despatched from the loading facility.	Date/Time	Format DD/MM/YYYY
territory	Not used	Text	
contact	The name of the primary contact for this renewal.	Text	
modulartype	Not used	Text	
switchsize	Not used	Text	
location	Not used	Text	
renewalstatus	The current status of the renewal.	Text	
notes	Freeformat notes.	Memo	
update_user	Not used	Text	
modified	Date/time the record was last updated.	Date/Time	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Date/Time	Format DD/MM/YYYY HH:MM:SS Must be populated if record generated outside of VCE.

4.1.8 Renewal Status – leams_renewalstatus

Field Name	Description	Type	Notes
OID	Unique reference supplied by Visual CE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
code	A unique code for this record.	Text	PRIMARY KEY
description	A description of the code.	Text	
update_user	Not used	Text	
modified	Date/time the record was last updated.	Date/Time	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Date/Time	Format DD/MM/YYYY HH:MM:SS Must be populated if record generated outside of VCE.

4.1.9 Transactions – leams_transactiondetails

Field Name	Description	Type	Notes
OID	Unique reference supplied by Visual CE.	Long Integer	Leave as NULL or 0 if record first created in database or web app. NOT INDEXED
renewal	The renewal to which this record belongs.	Text	INDEXED – NOT UNIQUE
tw_rfid	The RFID code of the SCPV to which the assets belong.	Text	INDEXED – NOT UNIQUE
asset_rfid	The RFID code of the asset.	Text	INDEXED – NOT UNIQUE
dupe_key	The unique key for this record – a combination of renewal, tw_rfid and asset_rfid numbers.	Text	PRIMARY KEY
update_user	Not used	Text	
modified	Date/time the record was last updated.	Date/Time	Format DD/MM/YYYY HH:MM:SS
TIMESTAMP	Required for synchronisation.	Date/Time	Format DD/MM/YYYY HH:MM:SS Must be populated if record generated outside of VCE.

4.1.10 Synchronisation Control – SYWARE_SyncInfo

Field Name	Description	Type	Notes
TableName	The table to which the synchronisation refers.	Text	
DeviceName	The id of the handheld device.	Text	
DesktopOID	The OID reference that is held on the central database.	Text	
HandheldOID	The OID reference that is held on the specified device.	Text	
HandheldTimestamp	A timestamp of when the record was synchronised.	Text	

4.2 Table Relationships

The LEAMS system centres around one main table – the **leams_transactiondetails** table. This provides the user with the ability to record consist details. A consist is defined as being a group of assets which "belong" to their parent SCPVs which in turn "belong" to a single, unique renewal reference.

If a renewal consists of numerous possessions, there will need to be a unique reference number for each so that each consist can be assigned to it.

e.g. Renewal for Luton North which is made up of three possessions to change 6 point ends could be referenced as follows:

1. LUTN245246
2. LUTN247248
3. LUTN249250

Each reference will have a consist assigned to it which will be made up of numerous SCPVs and their associated assets.

e.g. For a renewal that had two SCPV units, each with three assets, the consist would be as follows:

Renewal: LUTN245246

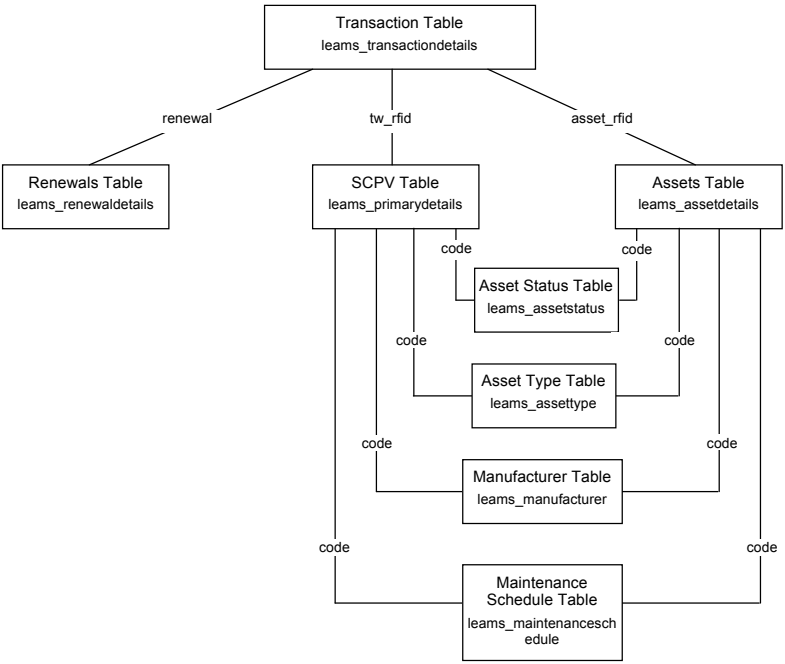
1st SCPV 88000123
1st Asset 00001001
2nd Asset 00001002
3rd Asset 00001003

2nd SCPV 88000456
1st Asset 00002001
2nd Asset 00002002
3rd Asset 00002003

This in turn, will generate the following records on the transaction table

OID	renewal	tw_rfid	asset_rfid	dupe_key	update_user	modified	TIMESTAMP
Unique numbers generated by VCE	LUTN245246	88000123	00001001	LUTN2452468800012300001001	Currently not used	Date/time when the transaction was recorded	Date/time of the transaction if it was created outside VCE
	LUTN245246	88000123	00001002	LUTN2452468800012300001002			
	LUTN245246	88000123	00001003	LUTN2452468800012300001003			
	LUTN245246	88000456	00002001	LUTN2452468800045600002001			
	LUTN245246	88000456	00002002	LUTN2452468800045600002002			
	LUTN245246	88000456	00002003	LUTN2452468800045600002003			

The transaction table links to the other tables within the system to enable lookups to be performed and the relational integrity maintained.



4.3 Desktop Application Forms

The LEAMS desktop application consists of a number of forms built on underlying tables and presented to the user in a menu driven structure. Each form contains buttons with Visual Basic (VB) script to navigate between forms and run reports.

The following forms are available:

Menu_Admin	-	Contains the form Sub_Transactions plus an [Update] button.
Menu_AssetTypes	-	Contains the sub form Sub_AssetTypes.
Menu_Main	-	The first form to be loaded when the application starts.
Menu_Manufacturers	-	Contains the sub form Sub_Manufacturers.
Menu_Primary	-	Contains the sub form Sub_Primary.
Menu_Renewals	-	Contains the sub form Sub_Renewals.
Menu_Reports	-	Provides access to the various reports that are available.
Menu_Secondary	-	Contains the sub form Sub_Secondary.
Primary Asset Details	-	Displays additional information for primary assets – accessed from the Menu_Primary form.
Renewal Details	-	Displays additional information for renewal records – accessed from the Menu_Renewals form.
Secondary Asset Details	-	Displays additional information for secondary assets - accessed from the Menu_Secondary form.
Sub_AssetTypes	-	Displays the asset type records.
Sub_Manufacturers	-	Displays the manufacturers records.
Sub_Primary	-	Displays the primary asset records.
Sub_Renewals	-	Displays the renewal records.
Sub_Secondary	-	Displays the secondary asset records.
Sub_Transactions	-	Displays the transaction records.

Navigation Buttons

Each of the main menus (those starting Menu_) contains navigation buttons to allow the user to move between forms within the application. Each button has underlying VB script that controls this behaviour.

Primary Asset Details

```
Private Sub Button_PrimaryDetails_Click()
   DoCmd.Close acForm, Me.Name
   DoCmd.OpenForm "Menu_Primary"
End Sub
```

Secon*dary Asset Details*

```
Private Sub Button_SecondaryDetails_Click()
   DoCmd.Close acForm, Me.Name
   DoCmd.OpenForm "Menu_Secondary"
End Sub
```

Renewal Details

```
Private Sub Button_RenewalDetails_Click()
   DoCmd.Close acForm, Me.Name
   DoCmd.OpenForm "Menu_Renewals"
```

```
End Sub

Asset Types
Private Sub Button_AssetTypes_Click()
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm "Menu_AssetTypes"
End Sub

Manufacturers
Private Sub Button_Manufacturers_Click()
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm "Menu_Manufacturers"
End Sub

Reports Menu
Private Sub Button_ReportMenu_Click()
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm "Menu_Reports"
End Sub

Admin Menu
Private Sub Button_AdminMenu_Click()
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm "Menu_Admin"
End Sub
```

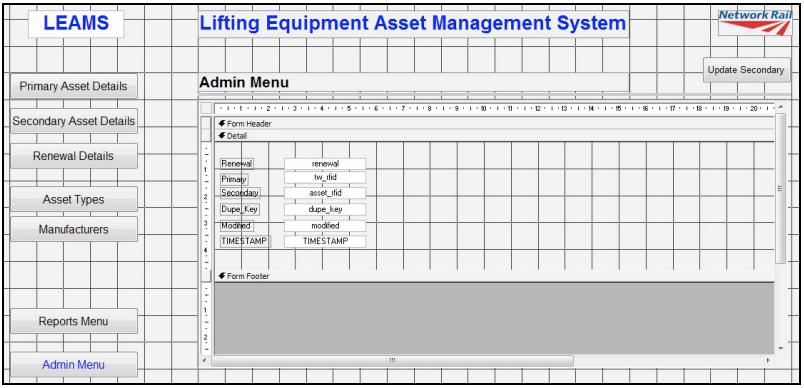
The script for the button on its own form is replaced with the following:

```
Private Sub Form_Load()
    DoCmd.Maximize
End Sub
```

The user can access the main menu form from anywhere within the application by clicking on the LEAMS logo. This has the following script attached:

```
Private Sub Label55_Click()
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm "Menu_Main"
End Sub
```

Menu_Admin



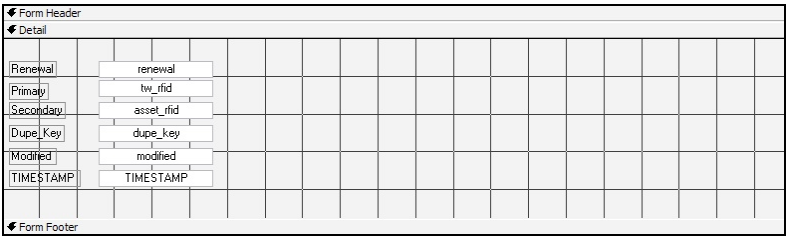
Title: Admin Menu

Buttons: Navigation menu bar — As detailed above

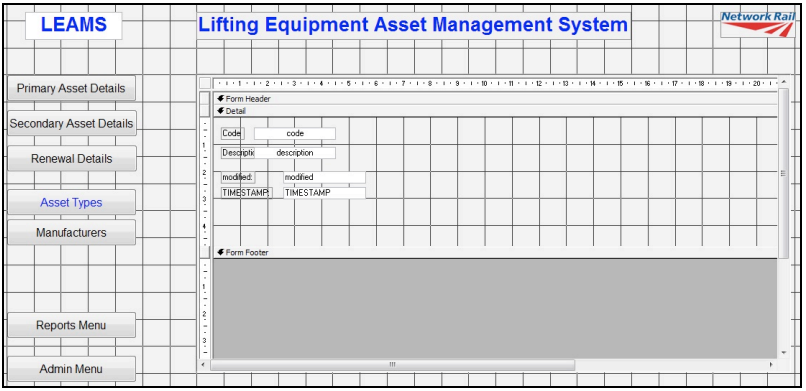
Update Secondary — Used to update secondary asset information from the Crimson system:

```
Private Sub Update_Click()
    DoCmd.TransferSpreadsheet acImport, acSpreadsheetTypeExcel8,
    "Report1", "C:\Report1.xls", True, "(Report1$"
    Dim SQLCmd As String
    SQLCmd = "UPDATE [leams_assetdetails] INNER JOIN [Report1] ON
    [leams_assetdetails].[Serial] = [Report1].[Serial No] SET
    [leams_assetdetails].[inspection_no] =  [Report1].[Report No] & '/' &
    [Report1].[Report Version], [leams_assetdetails].[modified]=NOW(),
    [leams_assetdetails].[TIMESTAMP]=NOW(),
    [leams_assetdetails].[last_insp_date]=[Report1].[Last Inspection Date],
    [leams_assetdetails].[insp_due_date]=[Report1].[Latest Date of Next
    Examination] WHERE [Report1].[Last Inspection Date] >
    [leams_assetdetails].[last_insp_date]"
    DoCmd.RunSQL SQLCmd
    DoCmd.RunSQL "DROP TABLE Report1"
End Sub
```

Sub Form: Sub_Transactions

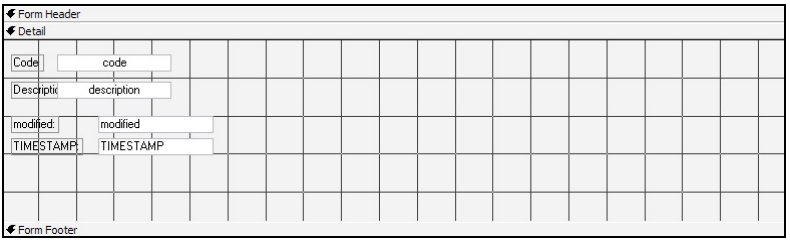


Menu_AssetTypes

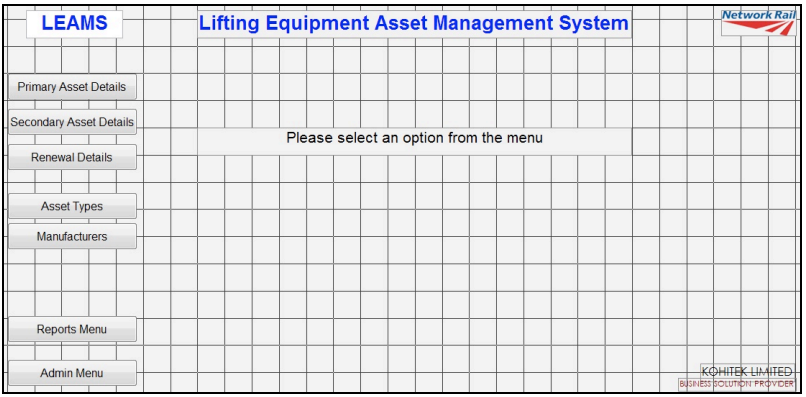


Buttons: Navigation menu bar As detailed above

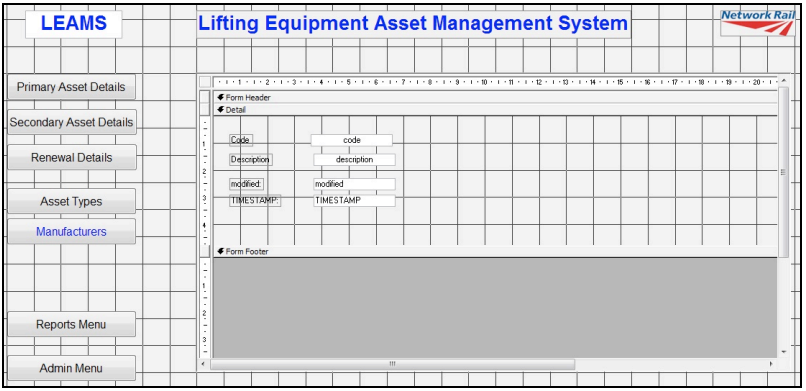
Sub Form: Sub_AssetTypes



Menu_Main

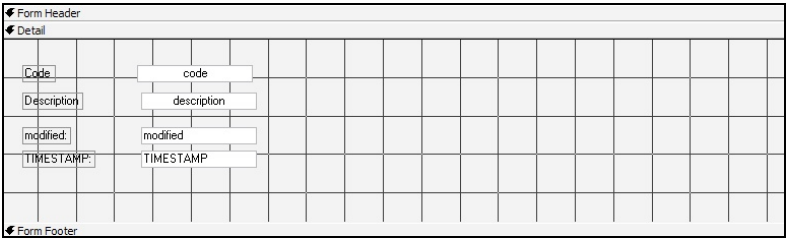


Menu_Manufacturers

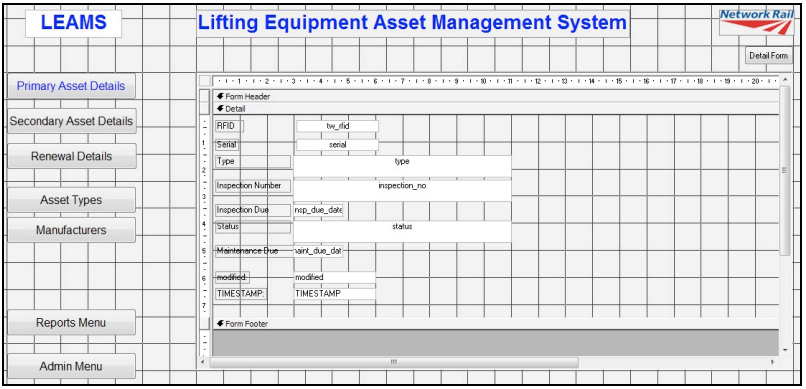


Buttons: Navigation menu bar As detailed above

Sub Form: Sub_Manufacturers



Menu_Primary

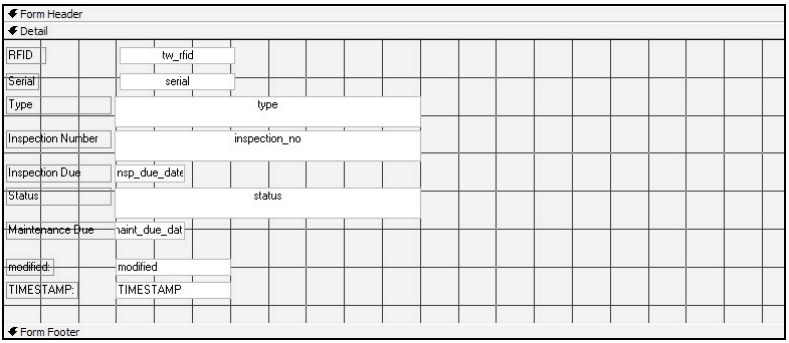


Buttons: Navigation menu bar — As detailed above

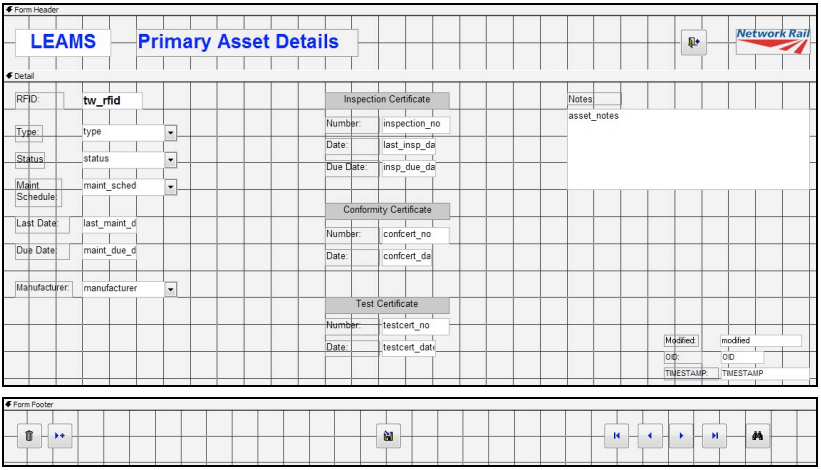
Detail Form — Opens the Primary Detail form:

```
Private Sub Button_PrimaryDetailForm_Click()
    stDocName = "Primary Asset Details"
    stLinkCriteria = "[tw_rfid]=" & "'" & Sub_Primary![tw_rfid] & "'"
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm stDocName, , , stLinkCriteria
End Sub
```

Sub Form: Sub_Primary



Primary Detail form:



To exit from this form back to the Menu_Primary form, users can click on the exit button (next to the NR logo):

```
Private Sub Button_ExitPrimary_Click()
   DoCmd.Close acForm, Me.Name
   DoCmd.OpenForm "Menu_Primary"
End Sub
```

The detail form contains processing buttons within the footer to allow the user to edit the primary asset data. Each of these buttons has underlying VB script:

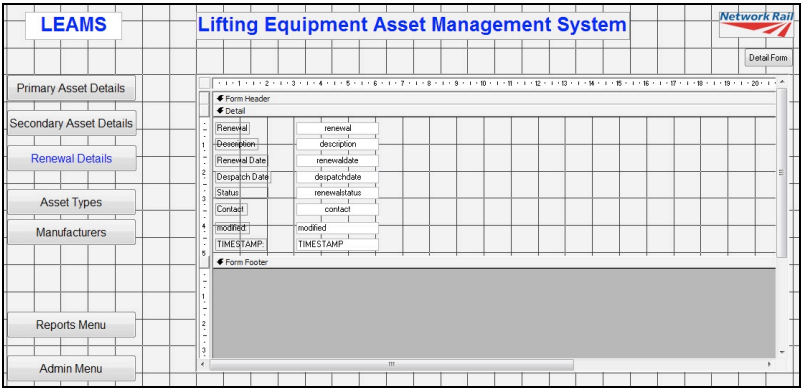
```
Private Sub Button_NextRecord_Click()

   DoCmd.GoToRecord , , acNext
End Sub

Private Sub Button_LastRecord_Click()
   DoCmd.GoToRecord , , acLast
End Sub

Private Sub Button_FirstRecord_Click()
   DoCmd.GoToRecord , , acFirst
End Sub

Private Sub Button_PreviousRecord_Click()
   DoCmd.GoToRecord , , acPrevious
End Sub

Private Sub Command59_Click()
   Screen.PreviousControl.SetFocus
   DoCmd.DoMenuItem acFormBar, acEditMenu, 10, , acMenuVer70
End Sub

Private Sub Button_Search_Click()
   Screen.PreviousControl.SetFocus
   DoCmd.DoMenuItem acFormBar, acEditMenu, 10, , acMenuVer70
End Sub
```

```
Private Sub Button_AddRecord_Click()
   DoCmd.GoToRecord , , acNewRec
End Sub

Private Sub Button_Save_Click()
   DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
End Sub

Private Sub Button_Delete_Click()
   DoCmd.DoMenuItem acFormBar, acEditMenu, 8, , acMenuVer70
   DoCmd.DoMenuItem acFormBar, acEditMenu, 6, , acMenuVer70
End Sub

Private Sub Button_Exit_Click()
   DoCmd.Close
End Sub
```

When records are changed by a user (added, deleted or amended), the system updates the TIMESTAMP field on the database for the record. This ensures that the changes will be synchronised with the handheld units:

```
Private Sub Form_Dirty(Cancel As Integer)
   Me.[TIMESTAMP] = Now()
   Me.[modified] = Now()
End Sub
```

Menu_Renewals

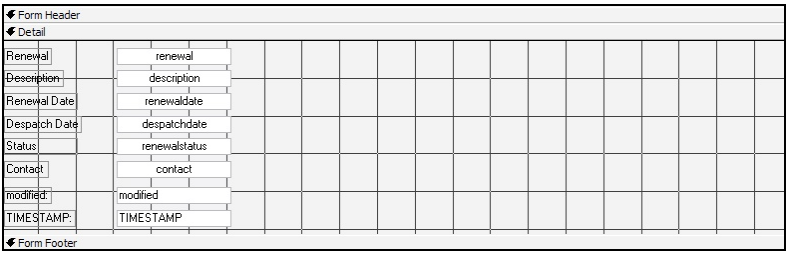


Buttons: Navigation menu bar — As detailed above

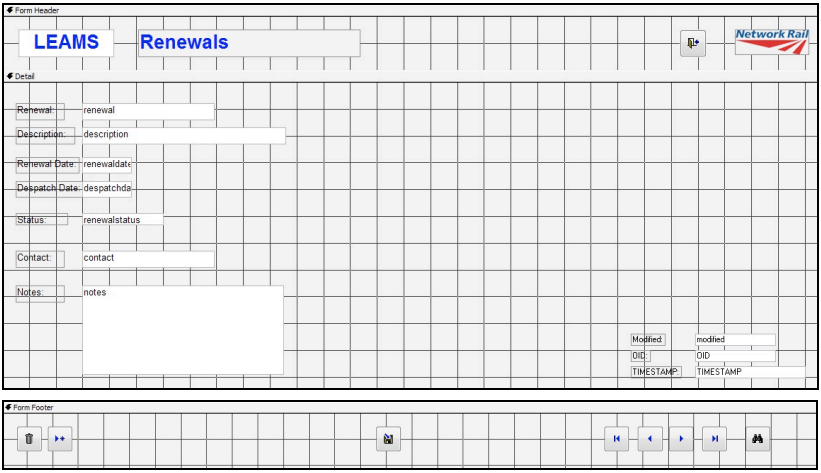
Detail Form — Opens the Renewals Detail form:

```
Private Sub Button_RenewalDetailForm_Click()
    stDocName = "Renewal Details"
    stLinkCriteria = "[renewal]=" & "'" & Sub_Renewals![renewal] & "'"
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm stDocName, , , stLinkCriteria
End Sub
```

Sub Form: Sub_Renewals



Renewals Detail Form:



To exit from this form back to the Menu_Primary form, users can click on the exit button (next to the NR logo):

```
Private Sub Button_ExitRenewals_Click()
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm "Menu_Renewals"
End sub
```

The detail form contains processing buttons within the footer to allow the user to edit the primary asset data. Each of these buttons has underlying VB script:

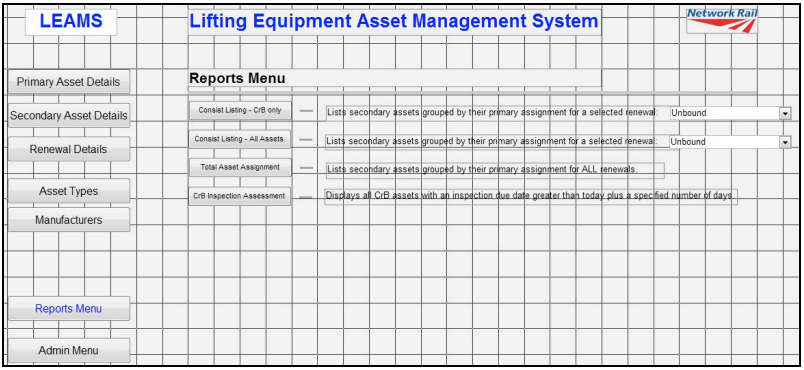
```
Private Sub Button_NextRecord_Click()
    DoCmd.GoToRecord , , acNext
End Sub

Private Sub Button_LastRecord_Click()
    DoCmd.GoToRecord , , acLast
End Sub

Private Sub Button_FirstRecord_Click()
    DoCmd.GoToRecord , , acFirst
End Sub

Private Sub Button_PreviousRecord_Click()
    DoCmd.GoToRecord , , acPrevious
End Sub

Private Sub Command59_Click()
    Screen.PreviousControl.SetFocus
    DoCmd.DoMenuItem acFormBar, acEditMenu, 10, , acMenuVer70
End Sub

Private Sub Button_Search_Click()
    Screen.PreviousControl.SetFocus
    DoCmd.DoMenuItem acFormBar, acEditMenu, 10, , acMenuVer70
End Sub
```

```
Private Sub Button_AddRecord_Click()
    DoCmd.GoToRecord , , acNewRec
End Sub


Private Sub Button_Save_Click()
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
End Sub

Private Sub Button_Delete_Click()
    DoCmd.DoMenuItem acFormBar, acEditMenu, 8, , acMenuVer70
    DoCmd.DoMenuItem acFormBar, acEditMenu, 6, , acMenuVer70
End Sub

Private Sub Button_Exit_Click()
    DoCmd.Close
End Sub
```

When records are changed by a user (added, deleted or amended), the system updates the TIMESTAMP field on the database for the record. This ensures that the changes will be synchronised with the handheld units:

```
Private Sub Form_Dirty(Cancel As Integer)
    Me.[TIMESTAMP] = Now()
    Me.[modified] = Now()
End Sub
```

Menu_Reports


LEAMS
Lifting Equipment Asset Management System
Network Rail
Primary Asset Details
Secondary Asset Details
Renewal Details
Asset Types
Manufacturers
Reports Menu
Admin Menu
Reports Menu
Consist Listing - CrB only
Lists secondary assets grouped by their primary assignment for a selected renewal.
Unbound
Consist Listing - All Assets
Lists secondary assets grouped by their primary assignment for a selected renewal.
Unbound
Total Asset Assignment
Lists secondary assets grouped by their primary assignment for ALL renewals.
CrB Inspection Assessment
Displays all CrB assets with an inspection due date greater than today plus a specified number of days.

Title: Reports Menu

Buttons: Navigation menu bar As detailed above

Consist Listing - CrB only:

```
Private Sub Button_CRBrpt_Click()
    DoCmd.OpenReport "rptTransactionListCRB", acPreview, , "renewal = '"
    & Me.TransRptFilterCRB.Column(0) & "'"
End Sub
```

Consist Listing – All Assets:

```
Private Sub Button_SpecificAssetRpt_Click()
    DoCmd.OpenReport "rptTransactionListSingle", acPreview, , "renewal =
    '" & Me.TransRptFilter.Column(0) & "'"
End Sub
```

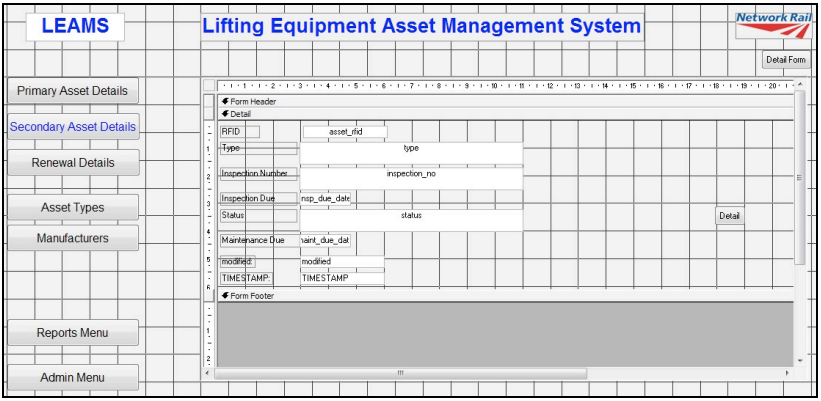
Total Asset Assignment:

```
Private Sub Button_TotalAssetRpt_Click()
    DoCmd.OpenReport "rptTransactionListAll", acPreview
End Sub
```

CrB Inspection Assignment:

```
Private Sub Button_CRBAnalysis_Click()
    DoCmd.OpenReport "rptCRBInspectionAnalysis", acPreview, ,
    "insp_due_date >Now()+ Days_To_Inspection"
End Sub
```

Menu_Secondary

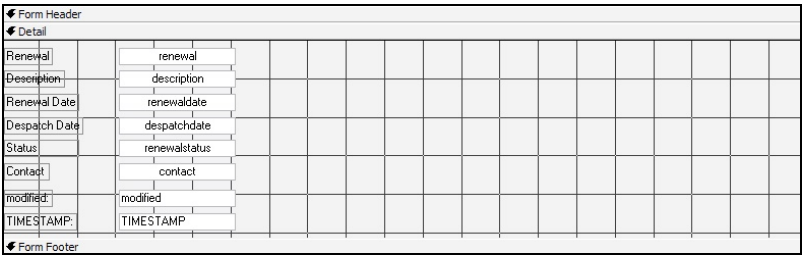


Buttons: Navigation menu bar — As detailed above

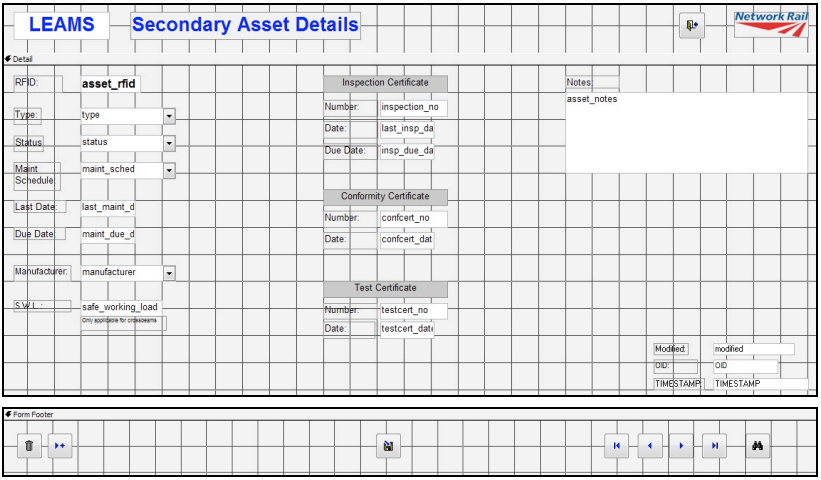
Detail Form — Opens the Renewals Detail form:

```
Private Sub Button_SecondaryDetailForm_Click()
    stDocName = "Secondary Asset Details"
    stLinkCriteria = "[asset_rfid]=" & "'" & Sub_Secondary![asset_rfid] & "'"
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm stDocName, , , stLinkCriteria
End Sub
```

Sub Form: Sub_Renewals



Secondary Details Form:



To exit from this form back to the Menu_Primary form, users can click on the exit button (next to the NR logo):

```
Private Sub Button_ExitSecondary_Click()
    DoCmd.Close acForm, Me.Name
    DoCmd.OpenForm "Menu_Secondary"
End Sub
```

The detail form contains processing buttons within the footer to allow the user to edit the primary asset data. Each of these buttons has underlying VB script:

```
Private Sub Button_NextRecord_Click()
    DoCmd.GoToRecord , , acNext
End Sub

Private Sub Button_LastRecord_Click()
    DoCmd.GoToRecord , , acLast
End Sub

Private Sub Button_FirstRecord_Click()
    DoCmd.GoToRecord , , acFirst
End Sub

Private Sub Button_PreviousRecord_Click()
    DoCmd.GoToRecord , , acPrevious
End Sub

Private Sub Command59_Click()
    Screen.PreviousControl.SetFocus
    DoCmd.DoMenuItem acFormBar, acEditMenu, 10, , acMenuVer70
End Sub

Private Sub Button_Search_Click()
    Screen.PreviousControl.SetFocus
    DoCmd.DoMenuItem acFormBar, acEditMenu, 10, , acMenuVer70
End Sub
```

```
Private Sub Button_AddRecord_Click()
    DoCmd.GoToRecord , , acNewRec
End Sub

Private Sub Button_Save_Click()
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
End Sub

Private Sub Button_Delete_Click()
    DoCmd.DoMenuItem acFormBar, acEditMenu, 8, , acMenuVer70
    DoCmd.DoMenuItem acFormBar, acEditMenu, 6, , acMenuVer70
End Sub

Private Sub Button_Exit_Click()
    DoCmd.Close
End Sub
```

When records are changed by a user (added, deleted or amended), the system updates the TIMESTAMP field on the database for the record. This ensures that the changes will be synchronised with the handheld units:

```
Private Sub Form_Dirty(Cancel As Integer)
    Me.[TIMESTAMP] = Now()
    Me.[modified] = Now()
End Sub
```

4.4 Desktop Application Queries/Reports

The LEAMS desktop application provides the user with a number of reports to interrogate the data held on the database.

The following reports are available:

rptCRBInspectionAnalysis	-	Produces a list of crossbeam assets that have an inspection due date greater than or equal to todays date plus a specified number of days.
rptTransactionListAll	-	Produces a list of all assets for all renewals.
rptTransactionListCRB	-	Produces a list of crossbeam assets for a specified renewal.
rptTransactionListSingle	-	Produces a list of all assets for a specified renewal.

The reports merely format the data which is generated by an underlying query within the application:

qryCRBInspectionAnalysis	-	Used by the rptCRBInspectionAnalysis report.
qryTransactionList	-	Used by the rptTransactionListAll report and the rptTransactionListSingle report.
qryTransactionListCRB	-	Used by the rptTransactionListCRB report.

CRB Inspection Analysis (rptCRBInspectionAnalysis)

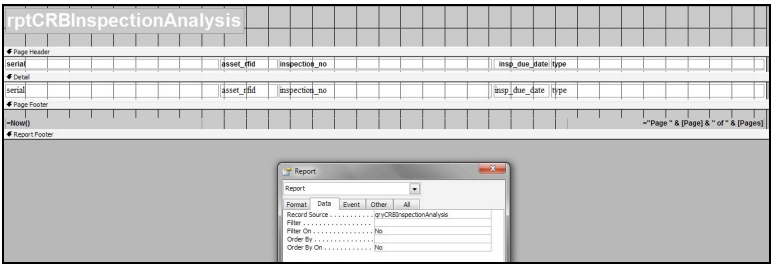
This report allows the user to view a list of crossbeams that have an inspection due date greater than today plus a specified number of days. The report is triggered by the relevant button the Menu_Reports form and runs the following script:

```
Private Sub Button_CRBAnalysis_Click()
    DoCmd.OpenReport "rptCRBInspectionAnalysis", acPreview, ,
    "insp_due_date >Now()+ Days_To_Inspection"
End Sub
```

The query qryCRBInspectionAnalysis is initiated:

Field:	asset_rfid	inspection_no	insp_due_date	serial	type
Table:	leams_assetdetails	leams_assetdetails	leams_assetdetails	leams_assetdetails	leams_assetdetails
Sort:	Ascending				
Show:	☑	☑	☑	☑	☑
Criteria:					Like "crb*"
or:					

The resulting dataset is then formatted into the report layout:



The report will filter the dataset based on the formula specified in the button script:

insp_due_date > Now() + Days_To_Inspection

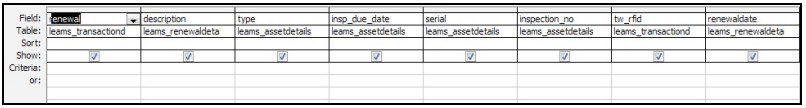
The “Days_To_Inspection” parameter is populated when the user runs the report. At this stage a pop-up window will ask the user to specify the number of days to be used in the calculation.

Total Asset Assignment (rptTransactionListAll)

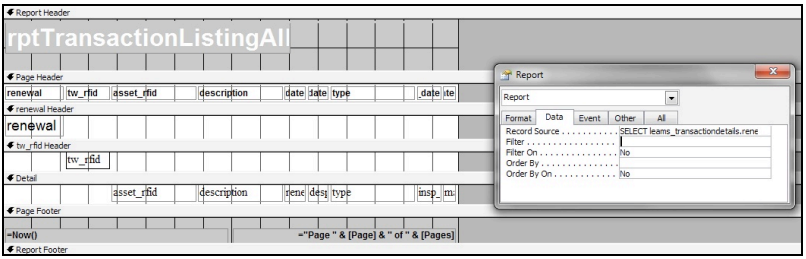
This report will produce a listing of all assets that have been assigned to all renewals that are held on the database. The report is triggered by the relevant button the Menu_Reports form and runs the following script:

```
Private Sub Button_TotalAssetRpt_Click()
    DoCmd.OpenReport "rptTransactionListAll", acPreview
End Sub
```

The query qryTransactionList is initiated:



The resulting dataset is then formatted into the report layout:

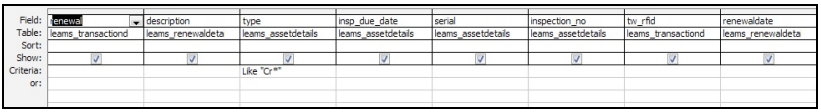


Consist Listing – CrB Only (rptTransactionListCRB)

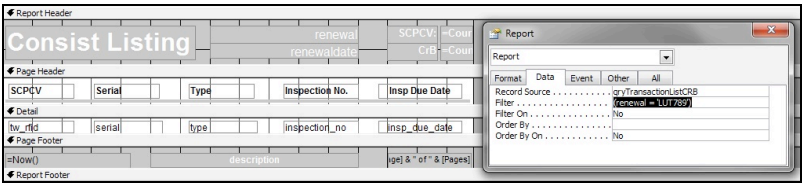
This report produces a list of crossbeams that have been assigned to a specified renewal. The report is triggered by the relevant button the Menu_Reports form and runs the following script:

```
Private Sub Button_CRBrpt_Click()
    DoCmd.OpenReport "rptTransactionListCRB", acPreview, , "renewal = '"
    & Me.TransRptFilterCRB.Column(0) & "'"
End Sub
```

The query qryTransactionListCRB is initiated:


Field: renewal | description | type | insp_due_date | serial | inspection_no | tw_rfid | renewaldate
Table: leams_transactiond | leams_renewaldeta | leams_assetdetails | leams_assetdetails | leams_assetdetails | leams_assetdetails | leams_transactiond | leams_renewaldeta
Sort:
Show:
Criteria: Like "Cr*"
or:

The resulting dataset is then formatted into the report layout:



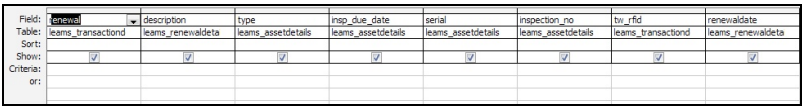
The report will filter the query's dataset based on the renewal chosen on the Menu_Reports form. This is a controlled using a dropdown – TransRptFilterCRB.

Consist Listing – All Assets (rptTransactionListSingle)

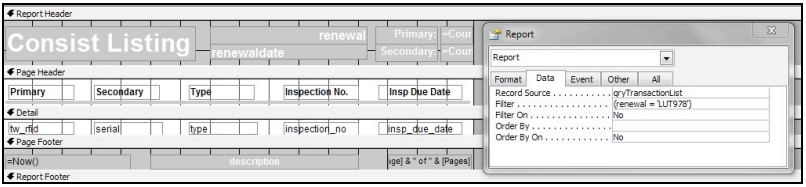
This report produces a list of crossbeams that have been assigned to a specified renewal. The report is triggered by the relevant button the Menu_Reports form and runs the following script:

```
Private Sub Button_SpecificAssetRpt_Click()
    DoCmd.OpenReport "rptTransactionListSingle", acPreview, , "renewal =
    '" & Me.TransRptFilter.Column(0) & "'"
End Sub
```

The query qryTransactionList is initiated:



The resulting dataset is then formatted into the report layout:



The report will filter the query's dataset based on the renewal chosen on the Menu_Reports form. This is a controlled using a dropdown – TransRptFilter.

5. Technical Specification – Handheld Application

5.1 Handheld Application Forms

The LEAMS handheld application consists of a number of forms, most of which are linked to a database table. The forms are primarily used by the operators to input details of renewal consists. In addition, there are also forms that can be used to maintain the underpinning data though this would normally be carried out using the desktop application.

Form Names

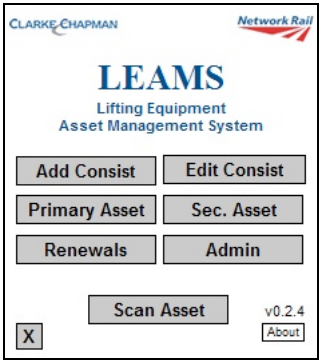
5.1.1	MainMenu	-	Initial startup menu
5.1.2	leams_transactiondetails	-	Enter consist details
5.1.3	leams_consistlist	-	Edit consist details
5.1.4	leams_primarydetails	-	Maintain SCPV details
5.1.5	leams_assetdetails	-	Maintain asset details
5.1.6	leams_renewaldetails	-	Enter renewal details
5.1.7	leams_assetscan	-	Scan an individual asset
5.1.8	leams_admincontrol	-	Administrator functions

Each form has a multitude of input fields, lookup fields and macros which are triggered by various events within the application.

To add a new consist, click on the [Add Consist] button. To edit an existing consist (delete or replace assets), click on the [Edit Consist] button. To simply view the details of an asset, click on the [Scan Asset] button.

5.1.1 MainMenu

This in the initial menu that is presented to the operator when they start the application.



Title:	n/a			
Buttons:	Add Consist	opens	FORM	leams_transactiondetails
	Edit Consist	opens	FORM	leams_consistlist
	Primary Asset	opens	FORM	leams_primarydetails
	Sec. Asset	opens	FORM	leams_assetdetails
	Renewals	opens	FORM	leams_renewaldetails
	Admin	opens	FORM	leams_admincontrol
	Scan Asset	opens	FORM	leams_assetscan
Fields:	n/a			
Macros:	n/a			
UseCase:	User is presented with this menu when they open the application. They then choose the required function by tapping the relevant option.			

Other Functions

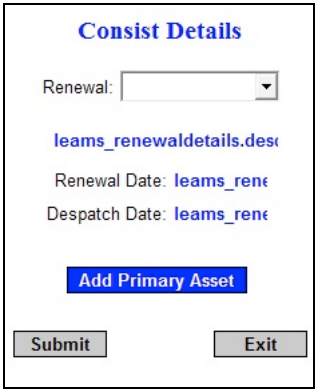
- Exit button [X]. This allows the user to exit the application if required.
- About Button. When tapped, this will show text about the application – Kohitek Ltd copyright and version number.
- Company Logos. The images for these are held on the handheld device in the images folder within the LEAMS application folder.

5.1.2 leams_transactiondetails

This is the primary form within the application that enables users to enter details of renewal consists. It consists of four pages.

Page 1 - Select Renewal

The first page of the form allows the operator to choose the renewal to which the consist will belong.



Title:	Consist Details			
Buttons:	Add Primary Asset	runs	MACRO	add_SCPV
	Submit	runs	MACRO	submit
	Exit	runs	MACRO	exit

Fields:	**renewal** dropdown	connected to @var(0) lookup “renewal” from table leams_renewaldetails keyed on renewal and filtered on @var(71) against *renewalstatus* with a value of ‘Pending’. This restricts the renewals shown to those with a pending status.
	description derived	lookup “description” from table leams_renewal details keyed on @var(0).
	renewaldate derived	lookup “renewaldate” from table leams_renewaldetails keyed on @var(0).
	despatchdate derived	lookup “despatchdate” from table leams_renewaldetails keyed on @var(0).

Macros:	**initialise** Option|Recalc Record|Insert	[Triggered on form open]
	Assign	‘’ to @var(0)
	Assign	‘’ to @var(1)
	Show/hide control	red.gif *hide the red light on page 2*
	Show/hide control	orange.gif *hide the orange light on page 2*
	Show/hide control	green.gif *hide the green light on page 2*
	Show/hide control	red1.gif *hide the red light on page 3*
	Show/hide control	orange1.gif *hide the orange light on page 3*
	Show/hide control	green1.gif *hide the green light on page 3*
	return from macro	

add_SCPV	[Triggered by Add Primary Asset button]
Show/hide control	red.gif
Show/hide control	orange.gif
Show/hide control	green.gif
Skip	if @var(0) = '' then 0 else 4 *Check field isn't blank to avoid saving blank records.*
Play sound	
Message box	'ERROR! - Please select a renewal'
Set focus	@var(0)
Return from macro	
Move to	239 0
Set focus	tw_rfid
Return from macro	
exit	[Triggered by Exit button]
Option|Recalc	
Record|Delete	
Run external	MainMenu
Return from macro	
submit	[Triggered by Submit] button
Skip	if @var(0) = '' then 0 else 3 *Check renewal field isn't blank*
Play sound	
Message box	'ERROR! – Please first select a renewal to submit'
Return from macro	
Play sound	
Message box	'Are you sure you wish to submit this renewal?' YES – skip 1, NO – skip 0
Return from macro	
Assign	@var(0) to @var(98)
Jump	leams_renewaldetails.vce keyed on @var(98) -> renewal. Only show matches and never create a record. *This will open the Renewals form and look for the renewal record that corresponds to the variable @var(98).*
Return from macro	

UseCase:

i) User clicks on the dropdown renewal field and selects a renewal. ONLY RENEWALS WITH A STATUS OF 'PENDING' WILL BE DISPLAYED.

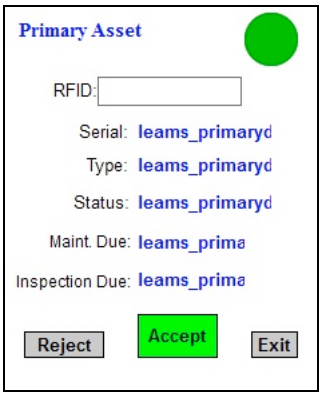
ii) When selected, the user checks the associated lookup information – description, renewal date, despatch date to confirm that the correct renewal has been selected.

iii) User can then either add an SCPV to this renewal by tapping on the [Add Primary] button, choose a different renewal by tapping on the dropdown again or return to the main menu by tapping on the Exit button.

iv) For an existing consist record that has not been submitted, the user can select the relevant renewal and then click on the [Submit] button to complete the submission process. This will change the status of the renewal to "Complete" and prevent any further changes. The user is then returned to the main menu.

Page 2 - Select Primary Asset

The second page of the form allows the operator to scan the first Primary Asset.



Title:	Primary Asset			
Buttons:	Accept	runs	MACRO	accept_parent
	Reject	runs	MACRO	reject
	Exit	runs	MACRO	exit

Fields:	**tw_rfid** input	data entry field for the Primary Asset RFID value which is normally scanned but can be manually keyed.
	@var(0) derived	global variable containing the renewal value
	serial derived	lookup “serial” from table leams_primarydetails keyed on tw_rfid.
	type derived	lookup “type” from table leams_primarydetails keyed on tw_rfid. SAVE INTO **@var(3)**.
	status derived	lookup “status” from table leams_primarydetails keyed on tw_rfid. SAVE INTO **@var(37)**.
	maint_due_date derived	lookup “maint_due_date” from table leams_primarydetails keyed on tw_rfid. SAVE INTO **@var(36)**.
	insp_due_date derived	lookup “insp_due_date” from table leams_primarydetails keyed on tw_rfid. SAVE INTO **@var(38)**.
	@var(42) calculated	HIDDEN - used by DATECHECK macro (@today - @var(36)) / @days)
	@var(44) calculated	HIDDEN - used by DATECHECK macro (@today - @var(38)) / @days)

Macros:

accept_parent [Triggered by Accept button]
Skip if tw_rfid = '' then 0 else 4
Play sound
Message box 'ERROR! - field cannot be blank. Press OK to add a primary asset'
Set focus tw_rfid
Return from macro
Assign tw_rfid to @var(1)
Move to 477 0 (page 3)
Set focus asset_rfid
Return from macro

reject [Triggered by Reject button]
Assign '' to tw_rfid
Set focus tw_rfid
Play sound
Show/hide control red.gif *hide the red light on page 3*
Show/hide control orange.gif *hide the orange light on page 3*
Show/hide control green.gif *hide the green light on page 3*
Return from macro

exit [Triggered by Exit button]
Option|Recalc
Record|Delete
Run external MainMenu
Return from macro

datecheck [Triggered by RFID lookup]
Option|Recalc
Skip if tw_rfid = '' then 0 else 1 *check for blank record*
Return from macro
Skip if @var(3) = '' then 0 else 6 *check it's a primary asset*
Play sound
Message box 'ERROR! – Invalid RFID code, please check details'
Assign '' to tw_rfid *reinitialise the primary asset field*
Set focus tw_rfid
Option|Recalc
Return from macro
Skip if @var(42) < 0 then 0 else 2
Skip if @var(37) = 'Available' then 0 else 1
Skip if @var(44) < 0 then 4 else 0
Show/hide control red.gif *show red light*
Play sound
Message box 'WARNING - CHECK EXPIRY DATES / STATUS!'
Stop macro
Skip if @var(42) < -28 then 0 else 1
Skip if @var(44) < -28 then 4 else 0
Show/hide control orange.gif *show orange light*
Play sound
Message box 'WARNING! - A Date Is About To Expire'
Stop macro
Show/hide control green.gif *show green light*
Return from macro

UseCase:

i) User scans the rfid tag of the first primary asset in the consist for this renewal.

ii) A successful scan will result in an audible “beep” and various information will be looked up from the database and displayed to the user.

iii) If the rfid is not recognised, an error message will be displayed and the user will need to determine the nature of the problem before continuing.

iv) A datecheck macro will run to calculate whether the status is valid or dates have expired (RED light displayed) or will expire within 28 days (ORANGE light) and warning messages will be produced. If dates are okay, a GREEN light will be displayed.

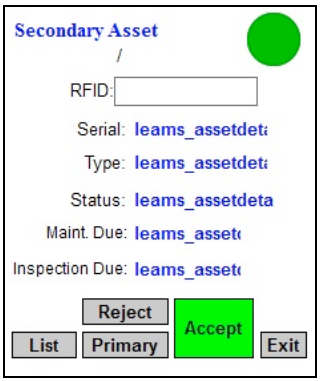
v) User acknowledges the error message if applicable.

vI) User checks the details and can either accept or reject the primary asset or exit back to the main menu by pressing the appropriate button. Pressing the reject button will reinitialise the RFID entry field and associated lookup fields will be blank. Pressing the accept button will take the user to page 3 where they can scan the first associated asset for this primary asset.

vii) If the scan is unsuccessful (e.g. the handset is too far away from the tag), an error message will be displayed in the RFID field. The user presses the Reject button to clear the error and tries again.

Page 3 - Select Secondary Asset

The third page allows the operator to scan the first secondary asset – i.e. an asset that is the "child" of the first primary asset "parent".



Title:	Secondary Asset			
Buttons	Accept	runs	MACRO	accept_child
	Reject	runs	MACRO	reject1
	List	runs	MACRO	list
	Next Primary	runs	MACRO	next_SCPV
	Exit	runs	MACRO	exit1

Fields:	**asset_rfid** input	data entry field for the asset RFID value which is normally scanned but can be manually keyed.
	@var(0) derived	global variable containing the renewal value
	@var(1) derived	global variable containing the primary asset value
	dupe_key calculated	HIDDEN - combines the @var(0), @var(1) and asset_rfid fields to provide a string which can be checked to ensure it is unique and avoid scanning duplicate records.
	serial derived	lookup "serial" from table leams_assetdetails keyed on asset_rfid.
	type derived	lookup "type" from table leams_assetdetails keyed on asset_rfid. SAVE INTO **@var(4).**
	status derived	lookup "status" from table leams_assetdetails keyed on tw_rfid. SAVE INTO **@var(57)**.
	maint_due_date derived	lookup "maint_due_date" from table leams_assetdetails keyed on tw_rfid. SAVE INTO **@var(56)**.
	insp_due_date derived	lookup "insp_due_date" from table leams_assetdetails keyed on asset_rfid SAVE INTO **@var(58)**.

	@var(62)	HIDDEN - used by DATECHECK1 macro
	calculated	(@today - @var(56)) / @days)
	@var(64)	HIDDEN - used by DATECHECK1 macro
	calculated	(@today - @var(58)) / @days)

Macros:

	accept_child	[Triggered by Accept button]
	Skip	if asset_rfid = '' then 0 else 4
	Play sound	
	Message box	'ERROR! - field cannot be blank. Press OK to scan an asset'
	Set focus	asset_rfid
	Return from macro	
	Assign	@var(0) to renewal
	Assign	@var(1) to tw_rfid
	Assign	@now to modified
	Record|Save	
	Play sound	
	Record|Insert	
	Show/hide control	red1.gif *hide red light1*
	Show/hide control	orange1.gif *hide orange light1*
	Show/hide control	green1.gif *hide green light1*
	Return from macro	
	reject1	[Triggered by Reject button]
	Assign	'' to asset_rfid
	Set focus	asset_rfid
	Play sound	
	Show/hide control	red1.gif *hide red light1*
	Show/hide control	orange1.gif *hide orange light1*
	Show/hide control	green1.gif *hide green light1*
	Return from macro	
	list	[Triggered by List button]
	Skip	if asset_rfid <> '' then 0 else 3
	Play sound	
	Message box	'WARNING! - You have not saved this record! Press OK to continue and select [ACCEPT] or [REJECT] BEFORE pressing the LIST button.'
	Return from macro	
	Record delete	
	Move to	720 0 (page 4)
	Option|Recalc	
	Return from macro	
	next_SCPV	[Triggered by Next SCPV button]
	Skip	if asset_rfid <> '' then 0 else 3
	Play sound	
	Message box	'WARNING! - You have not saved this record! Press OK to continue and select [ACCEPT] or [REJECT] BEFORE pressing the LIST button.'
	Return from macro	
	Move to	239 0 (page 2)
	Set focus	tw_rfid
	Show/hide control	red.gif *hide red light*
	Show/hide control	orange.gif *hide orange light*
	Show/hide control	green.gif *hide green light*
	Message box	'Assets added to SCPV successfully - press OK to add next SCPV'
	Return from macro	

exit1	[Triggered by Exit button]
Skip	if asset_rfid <> '' then 0 else 3
Play sound	
Message box	'WARNING! - You have not saved this record. Do you wish to exit without saving?'
Return from macro	
Record delete	
Run external	MainMenu
Return from macro	
datecheck1	[Triggered by RFID lookup]
Option recalc	
Skip	if asset_rfid = '' then 0 else 1
Return from macro	
Skip	if @var(4) = '' then 0 else 6
Play sound	
Message box	'ERROR! – Invalid RFID code, please check details'
Assign	'' to asset_rfid
Set focus	asset_rfid
Option|Recalc	
Return from macro	
Skip	if @var(62) < -7 then 0 else 2
Skip	if @var(57) = 'Available' then 0 else 1
Skip	if @var(64) < -7 then 4 else 0
Show/hide control	red1.gif *show red light*
Play sound	
Message box	'WARNING - CHECK EXPIRY DATES / STATUS!'
Stop macro	
Skip	if @var(62) < -28 then 0 else 1
Skip	if @var(64) < -28 then 4 else 0
Show/hide control	orange1.gif *show orange light*
Play sound	
Message box	'WARNING! - A Date Is About To Expire'
Stop macro	
Show/hide control	green1.gif *show green light*
Return from macro	

UseCase:

i) User scans the rfid tag of the first associated asset for the primary asset.

ii) A successful scan will result in an audible "beep" and various information will be looked up from the database and displayed to the user.

iii) If the rfid is not recognised, an error message will be displayed and the user will need to determine the nature of the problem before continuing.

iv) A datecheck1 macro will run to calculate whether the status is valid and inspection/maintenance dates have not expired (RED light displayed) or are about to expire within 21 days (ORANGE light). Warning messages will be produced. If dates/status are okay, a GREEN light will be displayed.

v) User acknowledges the error message if applicable.

vi) User checks the details and can either accept or reject the asset or exit back to the main menu by pressing the appropriate button. Pressing the reject button will reinitialise the asset RFID entry field and associated lookup fields will be blank. Pressing the accept button will save the record and reinitialise the asset RFID field to allow the next asset to be scanned.

vii) If the scan is unsuccessful (e.g. the handset is too far away from the tag), an error message will be displayed in the RFID field. The user presses the Reject button to clear the error and tries again.

viii) The user continues the above process until all asset have been scanned and accepted for this primary asset. The user then presses the Next

Primary button which takes them back to page 2 where they can scan the next primary asset. If the user presses this button before they have accepted an asset, a warning message will be displayed.

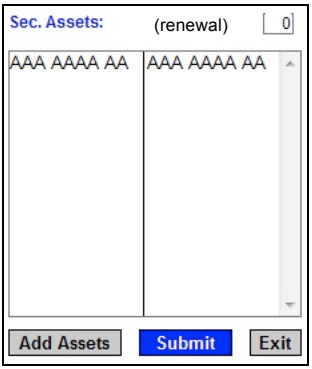
ix) At any time, the user can press the List button which will take them to page 4 and list all assets that have been scanned for this renewal. If the user presses this button before they have accepted an asset, a warning message will be displayed.

x) When users have scanned all primary assets and their associated assets, they tap the Submit buton. This will change the status of the renewal to “Active” and prevent any further changes. The user is then returned to the main menu.

xi) At any stage, users can tap the Exit button to return to the main menu. The consist will be saved in it’s current state i.e. not submitted so the user can return to add more assets if required before submitting.

Page 4 - List Scanned Assets

The final page allows the operator to list the assets that have already been scanned to verify that all assets for the renewal have been included.



Title:	Sec. Assets			
Buttons:	Add Assets	runs	MACRO	list_add_SCPV
	Submit	runs	MACRO	submit1
	Exit	runs	EXTERNAL	MainMenu
Fields:	**@var(0)** derived	global variable containing the renewal value		
	count derived	global variable value - @var(5)		
Grid:	sorted on	tw_rfid		
	fields:	tw_rfid asset_rfid		
	count into	@var(5)		
Macros:	**list_add_SCPV**	[Triggered by Add More Assets button]		
	Record|Insert			
	Move to	239 0 (page 2)		
	Assign	@var(0) to renewal		
	Set focus	tw_rfid		
	Show/hide control	red.gif *hide red light*		
	Show/hide control	orange.gif *hide orange light*		
	Show/hide control	green.gif *hide green light*		
	Message box	'Records saved successfully - press OK to add next primary asset'		
	Return from macro			

submit1	[Triggered by Submit button]
Skip	if @var(0) = '' then 0 else 3
Play sound	
Message box	'ERROR! – Please first select a renewal to submit'
Return from macro	
Play sound	
Message box	'Are you sure you wish to submit this renewal?' YES = skip 1 NO = skip 0
Return from macro	
Assign	@var(0) to @var(98)
Jump	leams_renewaldetails.vce keyed on @var(98) -> renewal. Only show matches and never create a record.
Return from macro	

UseCase: i) User presses the List button on page 3 having successfully accepted an asset.

ii) A list of scanned secondary assets is displayed for this renewal.

iii) User checks that details look correct and nothing is missing.

iv) User can either exit to the main menu or add further primary assets / assets by tapping the Add Assets button. This will take them back to page 2 where they can scan the next primary asset (or existing primary asset if they want to add another "child").

v) The user can submit the consist by tapping on the Submit button. This will change the status of the renewal to "Complete" and prevent any further changes. The user is then returned to the main menu.

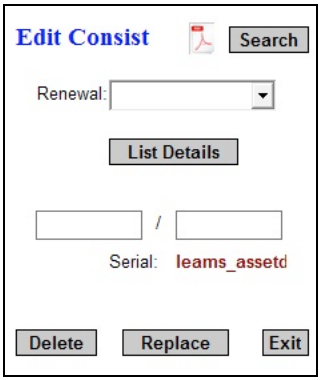
vi) At any stage, users can tap the Exit button to return to the main menu. The consist will be saved in it's current state i.e. not submitted so the user can return to add more assets if required before submitting.

5.1.3 leams_consistlist

This provides the user with a list of all assets that have been scanned and accepted for a particular renewal. They are able to delete and/or replace secondary assets from the renewal if required.

Page 1 - List Scanned Assets

This allows the operator to list the assets that have been assigned to a specified renewal.



Title:	Edit Consist			
Buttons:	Search	runs	RECORD | SEARCH	
	List Details	runs	MACRO	renewallist
	Delete	runs	MACRO	delete
	Replace	runs	MACRO	replace
	Exit	opens	FORM	MainMenu
	PDF (image)	opens	EXTERNAL	Adobe Reader

Fields:	**renewal** dropdown	allows the user to choose a renewal.
	tw_rfid lookup	displays a primary asset number for the renewal.
	asset_rfid lookup	displays a secondary asset number for the renewal.
	serial derived	lookup "serial" from table leams_assetdetails keyed on asset_rfid. SAVE INTO **@var(73).**
	@var(9) calculated	HIDDEN - (contains renewal value)

Macros:

initialise [Triggered on form open]
Option|Recalc
Return from macro

renewallist [Triggered by List Details button]
Option|List
Option|Filter|Predefined filter = renewallist
Record|First
Return from macro

delete [Triggered by Delete button]
Play sound
Message box 'Are you sure you wish to delete this record?'
YES, skip 1 NO, skip 0
Return from macro
Record delete
Message box 'Record deleted - press OK to continue'
Return from macro

replace [Triggered by Replace button]
Play sound
Message box 'Are you sure you wish to replace this record?'
YES, skip 1 NO, skip 0
Return from macro
Assign renewal to @var(53)
Assign tw_rfid to @var(54)
Record|Delete
Assign '' to @var(55)
Option|Recalc
Record|Insert
Move to 239 0 (page 2)
Assign @var(53) to renewal
Assign @var(54) to tw_rfid
Show/hide control red.gif
Show/hide control orange.gif
Show/hide control green.gif
Set focus @var(55)
Message box 'Original asset deleted. Please enter details of the new record – press OK to continue'
Return from macro

UseCase:

i) User enters the renewal number or uses the dropdown to select a renewal.

ii) OR they can tap on the Search button which will allow them to enter search criteria to locate the renewal.

iii) When the renewal has been located, the user taps the List Details button to display all associated records.

iv) Within the list view, the user can scroll to review details of the scanned assets. To exit the list view, the user double taps on any of the records and will be returned to the Edit Consist screen.

iv) To return to the main menu, they tap the Exit button.

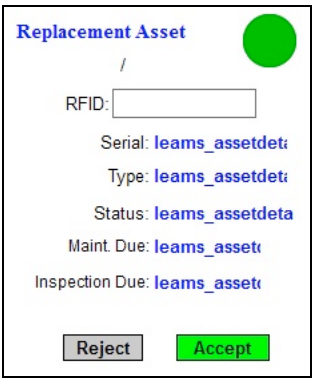
v) To delete a record, the user locates the record in the list view and double taps it. They are returned to the Edit Consist screen where details of the asset are displayed. They tap the [Delete] button.

vi) To replace a record, the user locates the original record as above. They then tap the [Replace] button and are taken to page 2 to enter details of the new asset.

vii) The user can view the associated PDF insurance certificate by tapping on the PDF icon. Adobe Reader will open and the certificate displayed.

Page 2 - Details of Replacement Asset

This allows the operator to enter details of the asset that is replacing the original record.



Title:	Replacement Asset			
Buttons:	Reject	runs	MACRO	reject1
	Accept	runs	MACRO	accept

Fields:

@var(53) calculated	displays the renewal value for the specified record.
@var(54) calculated	displays the primary asset for the specified record.
@var(55) input	data entry field for the asset RFID value which is normally scanned but can be manually keyed.
serial derived	lookup "serial" from table leams_assetdetails keyed on @var(55).
type derived	lookup "type" from table leams_assetdetails keyed on @var(55). SAVE INTO **@var(80).**
status derived	lookup "status" from table leams_assetdetails keyed on @var(55). SAVE INTO **@var(81)**.
maint_due_date derived	lookup "maint_due_date" from table leams_assetdetails keyed on @var(55). SAVE INTO **@var(82)**.
insp_due_date derived	lookup "insp_due_date" from table leams_assetdetails keyed on @var(55) SAVE INTO **@var(83)**.
@var(84) calculated	HIDDEN - used by DATECHECK1 macro (@today - @var(82)) / @days)
@var(85) calculated	HIDDEN - used by DATECHECK1 macro (@today - @var(83)) / @days)
dupe_key calculated	HIDDEN - combines @var(53), @var(54) and @var(55) to provide a string which can be checked to ensure it is unique and avoid scanning duplicate records.

Macros:

reject1	[Triggered by Reject button]
Assign	'' to @var(55)
Set focus	@var(55)
Play sound	
Show/hide control	red.gif
Show/hide control	orange.gif
Show/hide control	green.gif
Return from macro	
accept	[Triggered by Accept button]
Skip	if @var(55) = '' then 0 else 4
Play sound	
Message box	'ERROR! – field cannot be blank. Press OK to scan an asset'
Set focus	
Return from macro	
Assign	@var(53) to renewal
Assign	@var(54) to tw_rfid field
Assign	@var(55) to asset_rfid
Assign	@var(53) & @var(54) & @var(55) to dupe_key
Assign	@now to modified
Record|Save	
Play sound	
Message box	'You have successfully replaced the chosen asset. Press OK to continue.'
Return from macro	
datecheck1	[Triggered by RFID lookup]
Option recalc	
Skip	if @var(55) = '' then 0 else 1
Return from macro	
Skip	if @var(84) < -7 then 0 else 2
Skip	if @var(81) = 'Available' then 0 else 1
Skip	if @var(85) < -7 then 4 else 0
Show/hide control	red.gif *show red light*
Play sound	
Message box	'WARNING - CHECK DATES / STATUS!'
Stop macro	
Skip	if @var(84) < -28 then 0 else 1
Skip	if @var(85) < -28 then 4 else 0
Show/hide control	orange.gif *show orange light*
Play sound	
Message box	'WARNING! - A Date Is About To Expire'
Stop macro	
Show/hide control	green.gif *show green light*
Return from macro	

UseCase:

i) User scans the replacement secondary rfid tag

ii) A successful scan will result in an audible "beep" and various information will be looked up from the database and displayed to the user.

iii) A datecheck1 macro will run to calculate whether the status is valid and inspection/maintenance dates have not expired.

iv) User acknowledges any error message if applicable.

vi) User either accepts or rejects the asset. Reject will reinitialise the input field ready for a new scan. Accept will update the consist with the new record and return the user to the main menu.

vi) If the scan is unsuccessful (e.g. the handset is too far away from the tag), an error message will be displayed in the RFID field. The user presses the Reject button to clear the error and tries again.

5.1.4 leams_primarydetails

This provides the user with the ability to add, edit or delete the primary assets i.e. SCPV units – “tilting wagons”. It is strongly recommended that users carry out data maintenance via the web application so this facility is intended primarily as a backup.

Title:	Primary			
Buttons:	?	runs	RECORD | SEARCH	
	Add / +	runs	RECORD | INSERT	
	Delete	runs	MACRO	delete
	Save	runs	MACRO	add
	List / …	runs	OPTION | LIST	
	Exit / X	runs	MACRO	exit
	PDF (image)	opens	EXTERNAL	Adobe Reader

Fields:	**tw_rfid** input	data entry field for assets RFID value – can be scanned or manually entered. Must be 8 numeric.
	serial input	data entry for the assets physical tag number.
	type dropdown	default value – SCPV.
	status dropdown	display values from the leams_assetstatus table.
	maint_sched dropdown	values available: 6 months (default) or 12 months.
	last_maint_date input	the date the asset was last maintained.
	maint_due_date calculated	the date the asset is due for a maintenance check
	manufacturer dropdown	default value – Kirow.
	inspection_no input	the number of the inspection certificate.
	last_insp_date input	the date of the last inspection.
	insp_due_date input	the date the next inspection is due.
	confcert_no input	the certificate number of the conformity certificate.
	confcert_date input	the date of the conformity certificate.
	testcert_no input	the certificate number of the test certificate.
	testcert_date input	the date of the test certificate.
	asset_notes input	free format field for general notes.

Macros:	**add** Assign Record save Return from macro	[Triggered by Save button] @now to modified
	delete Message box Message box Record delete Message box Return from macro	[Triggered by Delete button] 'Are you sure?' YES, skip 1 NO, skip 0 'Record NOT deleted - press OK to return' 'Record deleted successfully - press OK to continue'

exit	[Triggered by Exit / X buttons]
Skip	if tw_rfid = '' then 2 else 0
Run external	Main Menu
Return from macro	
Record|Close	
Run external	Main menu
Return from macro	

UseCase:

i) Upon entering the form, details of the last saved asset will be displayed.

ii) User can edit the current record, add a new record, delete the current record, list all asset records in the database, search for a particular record, save the current record or exit back to the main menu by tapping the relevant button.

iii) To edit the current record, the user amends any of the values on screen and taps the Save button. The record is then updated in the database.

iv) If the user taps the Add button, a new record is inserted into the database and the user completes the fields on screen by either typing the information or selecting a value when applicable.

v) To delete the current record, the user taps the Delete button. A confirmation message will be displayed. If the user confirms the deletion, the record is deleted and the next available record in the database is displayed. If the user rejects the confirmation message they are returned to the current record.

vi) By tapping the List button, a list of all the assets within the database is displayed. The user can scroll to a particular record and when double tapped, the details of this record are displayed. The user can then edit or save the details accordingly.

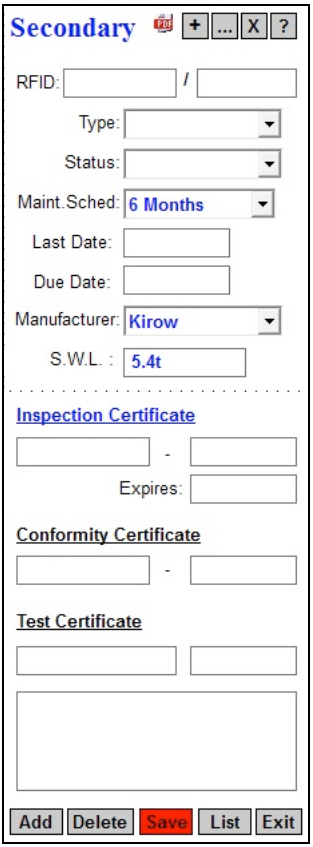
vii) To search for a particular record, the user taps the Search button and enters the relevant search criteria. Records matching this criteria and the user can select the appropriate record. Details of this record will then be displayed and can be edited/deleted accordingly.

viii) To view an assets insurance certificate, the user taps on the PDF icon which will open Adobe Reader and displays the associated image. Closing Adobe Reader will return the user to the Primary Asset screen.

ix) When the user is finished, they tap the Exit button to return to the main menu.

5.1.5 leams_assetdetails

This provides the user with the ability to add, edit or delete the secondary assets i.e. the "children" of the SCPV "parents". It is strongly recommended that users carry out data maintenance via the web application so this facility is intended primarily as a backup.



Title:	Secondary			
Buttons:	?	runs	RECORD | SEARCH	
	Add / +	runs	RECORD | INSERT	
	Delete	runs	MACRO	delete
	Save	runs	MACRO	add
	List / …	runs	OPTION | LIST	
	Exit / X	runs	MACRO	exit
	PDF (image)	opens	EXTERNAL	Adobe Reader

Fields:	**asset_rfid** input	data entry field for assets RFID value – can be scanned or manually entered. Must be 8 numeric.
	serial input	data entry for the assets physical tag number.
	type dropdown	pre-specified list of secondary asset types
	status dropdown	display values from the leams_assetstatus table.
	maint_sched dropdown	values available: 6 months (default) or 12 months.
	last_maint_date input	the date the asset was last maintained.
	maint_due_date calculated	the date the asset is due for a maintenance check
	manufacturer dropdown	default value – Kirow.
	safe_working_load input	default value – 5.4t
	inspection_no input	the number of the inspection certificate.
	last_insp_date input	the date of the last inspection.
	insp_due_date input	the date the next inspection is due.
	confcert_no input	the certificate number of the conformity certificate.
	confcert_date input	the date of the conformity certificate.
	testcert_no input	the certificate number of the test certificate.
	testcert_date input	the date of the test certificate.
	asset_notes input	free format field for general notes

Macros:	**add**	[Triggered by Save button]
	assign	@now TO modified
	record save	
	return from macro	
	delete	[Triggered by Delete button]
	message box	'Are you sure?' YES, skip 1 NO, skip 0
	message box	'Record NOT deleted - press OK to return'
	record delete	
	message box	'Record deleted successfully - press OK to continue'
	return from macro	

exit	[Triggered by Exit / X buttons]
Skip	if tw_rfid = '' then 2 else 0
Run external	Main Menu
Return from macro	
Record|Close	
Run external	Main menu
Return from macro	

UseCase:

i) Upon entering the form, details of the last saved asset will be displayed.

ii) User can edit the current record, add a new record, delete the current record, list all asset records in the database, search for a particular record, save the current record or exit back to the main menu by tapping the relevant button.

iii) To edit the current record, the user amends any of the values on screen and taps the Save button. The record is then updated in the database.

iv) If the user taps the Add button, a new record is inserted into the database and the user completes the fields on screen by either typing the information or selecting a value when applicable.

v) To delete the current record, the user taps the Delete button. A confirmation message will be displayed. If the user confirms the deletion, the record is deleted and the next available record in the database is displayed. If the user rejects the confirmation message they are returned to the current record.

vi) By tapping the List button, a list of all the assets within the database is displayed. The user can scroll to a particular record and when double tapped, the details of this record are displayed. The user can then edit or save the details accordingly.

vii) To search for a particular record, the user taps the Search button and enters the relevant search criteria. Records matching this criteria and the user can select the appropriate record. Details of this record will then be displayed and can be edited/deleted accordingly.

viii) To view an assets insurance certificate, the user taps on the PDF icon which will open Adobe Reader and displays the associated image. Closing Adobe Reader will return the user to the Primary Asset screen.

ix) When the user is finished, they tap the Exit button to return to the main menu.

5.1.6 leams_renewaldetails

This provides the user with the ability to add, edit or delete renewal details. This is required to enable assets to be assigned to a renewal during the course of creating a consist. It is strongly recommended that users carry out data maintenance via the web application so this facility is intended primarily as a backup.

Title:	Renewals			
Buttons:	Search	runs	RECORD | SEARCH	
	Add	runs	RECORD | INSERT	
	Delete	runs	MACRO	delete
	Save	runs	MACRO	save
	List	runs	MACRO	list
	Exit	runs	MACRO	exit

Fields:

renewal
input
data entry field for the renewal reference number. Maximum 10 alphanumeric.

description
input
data entry field for a free format description of the renewal. Maximum 30 alphanumeric.

renewal_date
input
the date of the renewal possession. Format DD/MM/YY

despatch_date
input
the date the consist will be despatched from the loading facility. Format DD/MM/YY

status
dropdown
values – Pending (default) or Complete.

asset_notes
input
free format field for general notes.

Macros:

status	[Triggered on form open]
Skip	if @var(98) > 0 then 0 else 5
Assign	'Complete' to renewalstatus
Play sound	
Message box	'Renewal status has been set to complete – click OK to return to main menu'
Assign	0 to @var(98)
Run external	Main menu
Return from macro	
save	[Triggered by Save button]
Skip	if renewal = '' then 0 else 5
Record|Delete	
Play sound	
Message box	'ERROR! – Blank record, no details saved. Click OK to return to main menu.'
Run external	Main menu
Return from macro	
Record|Save	
Play sound	
Message box	'Record saved – click OK to continue'
Return from macro	
delete	[Triggered by Delete button]
Message box	'Are you sure?' YES, skip 1 NO, skip 0
Return from macro	
Record|Delete	
Message box	'Record deleted successfully - press OK to continue'
Return from macro	
list	[Triggered by List button]
Record|First	
Option|List	
Return from macro	
exit	[Triggered by Exit button]
Skip	if renewal = '' then 0 else 1
Record|Delete	
Run external	Main menu
Return from macro	

UseCase:

i) Upon entering the form, details of the last saved renewal will be displayed.

ii) User can edit the current record, add a new record, delete the current record, list all renewal records in the database, search for a particular record, save the current record or exit back to the main menu by tapping the relevant button.

iii) To edit the current record, the user amends any of the values on screen and taps the Save button. The record is then updated in the database.

iv) If the user taps the Add button, a new record is inserted into the database and the user completes the fields on screen by either typing the information or selecting a value when applicable.

v) To delete the current record, the user taps the Delete button. A confirmation message will be displayed. If the user confirms the deletion, the record is deleted and the next available record in the database is displayed. If the user rejects the confirmation message they are returned to the current record.

vi) By tapping the List button, a list of all the renewals within the database is displayed. The user can scroll to a particular record and when double tapped, the details of this record are displayed. The user can then edit or save the details accordingly.

vii) To search for a particular record, the user taps the Search button and enters the relevant search criteria. Records matching this criteria and the user can select the appropriate record. Details of this record will then be displayed and can be edited/deleted accordingly.

viii) When the user is finished, they tap the Exit button to return to the main menu.

Renewal status processing

When the user taps the [Submit] button on the Add Consist form (either page 1 or page 4), the *submit* macro will set the variable @var(98) to a value of 1 and then jump to the Renewal form using the renewal field to locate the corresponding record.

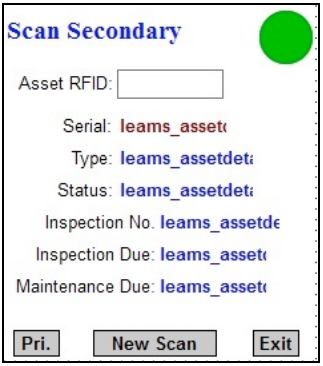
When the renewals form opens it will initiate the *status* macro which will check the value in @var(98). If it is set to 1, it will change the renewalstatus field from 'Pending' to 'Complete' and display a confirmation message to the user and reset the variable to a value of 0. When the user presses Ok to acknowledge the message, they will be returned to the main menu.

If the value of @var(98) is set to 0, the *status* macro will bypass the above processing allowing the user to add/edit/delete renewal records as normal.

5.1.7 leams_assetscan

This provides the user with the ability to quickly scan an individual asset to lookup its associated details.

Page 1 – Secondary Assets



Title:	Scan Secondary			
Buttons:	Pri.	runs	MACRO	primary
	New Scan	runs	MACRO	newscan
	Exit	runs	MACRO	exit

Fields:	**@var(30)** input	data entry field for assets RFID value – can be scanned or manually entered.
	serial derived	lookup “serial” from table leams_assetdetails keyed on @var(30) -> asset_rfid.
	type derived	lookup “type” from table leams_assetdetails keyed on @var(30) -> asset_rfid.
	@var(26) derived	lookup “status” from table leams_assetdetails keyed on @var(30) -> asset_rfid.
	inspection_no derived	lookup “inspection_no” from table leams_assetdetails keyed on @var(30) -> asset_rfid.
	@var(27) derived	lookup “insp_due_date” from table leams_assetdetails keyed on @var(30) -> asset_rfid.
	@var(28) derived	lookup “maint_due_date” from table leams_assetdetails keyed on @var(30) -> asset_rfid.
	@var(32) calculated	HIDDEN - used by DATECHECK macro (@today - @var(27)) / @days)
	@var(33) calculated	HIDDEN - used by DATECHECK macro (@today - @var(28)) / @days)

Macros:

initialise		[Triggered on form open]
Assign		'' to @var(30)
Assign		'' to @var(31)
Show/hide control		red.gif
Show/hide control		orange.gif
Show/hide control		green.gif
Show/hide control		red1.gif
Show/hide control		orange1.gif
Show/hide control		green1.gif
Move to		0 0
Option|Recalc		
Return from macro		
datecheck		[Triggered by RFID lookup]
Option|Recalc		
Skip		if @var(30) = '' then 0 else 1
Return from macro		
Skip		if @var(26) = '' then 0 else 4
Play sound		
Message box		'ERROR! – The RFID code has not been recognised'
Run macro		initialise *reload the macro to restart the process*
Return from macro		
Skip		if @var(33) < 0 then 0 else 2
Skip		if @var(26) = 'Available' then 0 else 1
Skip		if @var(32) < 0 then 4 else 0
Show/hide control		red.gif *show red light*
Play sound		
Message box		'WARNING - CHECK EXPIRY DATES / STATUS!'
Stop macro		
Skip		if @var(33) < -28 then 0 else 1
Skip		if @var(32) < -28 then 4 else 0
Show/hide control		orange.gif *show orange light*
Play sound		
Message box		'WARNING! - A Date Is About To Expire'
Stop macro		
Show/hide control		green.gif *show green light*
Return from macro		
primary		[Triggered by Pri. button]
Assign		'' to @var(31)
Option|Recalc		
Move to		239 0
Show/hide control		red1.gif
Show/hide control		orange1.gif
Show/hide control		green1.gif
Set focus		@var(31)
Return from macro		
newscan		[Triggered by New Scan button]
Assign		'' to @var(30)
Show/hide control		red.gif
Show/hide control		orange.gif
Show/hide control		green.gif
Set focus		@var(30)
Option|Recalc		
Return from macro		
exit		[Triggered by Exit button]
Assign		'' to @var(30)
Assign		'' to @var(31)
Option|Recalc		
Run external		MainMenu
Return from macro		

UseCase:

i) User scans the rfid tag of the asset.

ii) A successful scan will result in an audible “beep” and various information will be looked up from the database and displayed to the user.

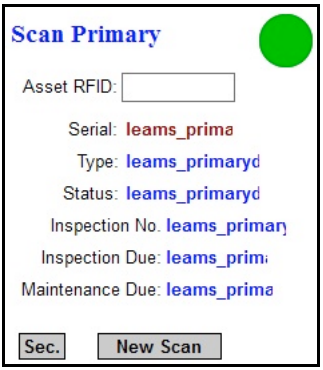
iii) A datecheck macro will run to calculate whether the expiry dates are within either 7 days (RED light displayed) or 28 days (ORANGE light) and warning messages will be produced. If dates are okay, a GREEN light will be displayed.

iv) User acknowledges the error message if applicable.

v) User can either scan a new asset by tapping the New Scan button scan a Primary asset by tapping the Pri. button or exit to the main menu by tapping the Exit button.

vi) If the scan is unsuccessful (e.g. the handset is too far away from the tag), an error message will be displayed in the RFID field. The user presses the New Scan button to clear the error and tries again.

Page 2 – Primary Assets



Title:	Scan Primary			
Buttons:	Sec.	runs	MACRO	secondary
	New Scan	runs	MACRO	newscan1
	Exit	runs	MACRO	exit

Fields:	**@var(31)** input	data entry field for assets RFID value – can be scanned or manually entered.
	serial derived	lookup “serial” from table leams_primarydetails keyed on @var(31) -> tw_rfid.
	type derived	lookup “type” from table leams_primarydetails keyed on @var(31) -> tw_rfid.
	@var(23) derived	lookup “status” from table leams_primarydetails keyed on @var(31) -> tw_rfid.
	inspection_no derived	lookup “inspection_no” from table leams_primarydetails keyed on @var(31) -> tw_rfid.
	@var(24) derived	lookup “insp_due_date” from table leams_primarydetails keyed on @var(31) -> tw_rfid.
	@var(25) derived	lookup “maint_due_date” from table leams_primarydetails keyed on @var(31) -> tw_rfid.
	@var(34) calculated	HIDDEN - used by DATECHECK macro (@today - @var(24)) / @days)
	@var(35) calculated	HIDDEN - used by DATECHECK macro (@today - @var(25)) / @days)

Macros:

datecheck [Triggered by RFID lookup]
Option|Recalc
Skip if @var(31) = '' then 0 else 1
Return from macro
Skip if @var(23) = '' then 0 else 4
Play sound
Message box 'ERROR! – The RFID code is not valid'
Run macro initialise *reload the macro to restart the process*
Run macro primary *reload the macro to go to page 2*
Return from macro
Skip if @var(35) < 0 then 0 else 2
Skip if @var(23) = 'Available' then 0 else 1
Skip if @var(34) < 0 then 4 else 0
Show/hide control red1.gif *show red light*
Play sound
Message box 'WARNING - CHECK EXPIRY DATES / STATUS!'
Stop macro
Skip if @var(35) < -28 then 0 else 1
Skip if @var(34) < -28 then 4 else 0
Show/hide control orange1.gif *show orange light*
Play sound
Message box 'WARNING! - A Date Is About To Expire'
Stop macro
Show/hide control green1.gif *show green light*
Return from macro

secondary [Triggered by Sec. button]
Assign '' to @var(30)
Option|Recalc
Move to 0 0
Show/hide control red.gif
Show/hide control orange.gif
Show/hide control green.gif
Set focus @var(30)
Return from macro

newscan1 [Triggered by New Scan button]
Assign '' to @var(31)
Show/hide control red1.gif
Show/hide control orange1.gif
Show/hide control green1.gif
Set focus @var(31)
Option|Recalc
Return from macro

UseCase:

i) User scans the rfid tag of the asset.

ii) A successful scan will result in an audible "beep" and various information will be looked up from the database and displayed to the user.

iii) A datecheck1 macro will run to calculate whether the expiry dates are within either 7 days (RED light displayed) or 28 days (ORANGE light) and warning messages will be produced. If dates are okay, a GREEN light will be displayed.

iv) User acknowledges the error message if applicable.

v) User can either scan a new asset by tapping the New Scan button scan a Secondary asset by tapping the Sec. button or exit to the main menu by tapping the Exit button.

vi) If the scan is unsuccessful (e.g. the handset is too far away from the tag), an error message will be displayed in the RFID field. The user presses the New Scan button to clear the error and tries again.

5.1.8 leams_admincontrol

This provides administrators with the ability to add, edit or delete records within the database. The form is password protected and is intended for administrators / support personnel only – as such it should be used WITH CAUTION.

Title:	Admin Control			
Password:	ccfm			
Buttons:	<	runs	RECORD | PREVIOUS	
	>	runs	RECORD | NEXT	
	-	runs	RECORD | DELETE	
	Search	runs	RECORD | SEARCH	
	Clear	runs	MACRO	clear
	List	runs	OPTION | LIST	
	Main Menu	runs	MACRO	mainmenu
	Exit App	runs	MACRO	exit

Fields:	**renewal** input	shows the renewal reference number. Read only.
	tw_rfid input	the rfid code of the parent asset. Read only.
	asset_rfid input	the rfid code of the child asset. Read only.
	dupe_key calculated	a unique reference number made up of the renewal, tw_rfid and asset_rfid numbers. Read only.
	modified calculated	date/time stamp showing when the record was modified. Read only.

Macros:

clear [Triggered by Clear button]
Option|Clear
Record|Close
Return from macro

exit [Triggered by Exit App button]
Record close
Return from macro

mainmenu [Triggered by Main Menu button]
Run external MainMenu
Return from macro

UseCase:

i) Upon entering the form, details of the last saved record will be displayed.

ii) User can only view records. All fields are read only.

iii) By tapping the List button, a list of all the records for this table will be displayed. The user can scroll to a particular record and when double tapped, the details of this record are displayed. The user can then edit or save the details accordingly.

iv) By tapping the search button, the user can enter search criteria and all records matching this criteria will be displayed.

v) If the user taps the Clear button, ALL RECORDS IN THE TABLE WILL BE DELETED!

5.2 Handheld Variables

This section details all of the global variable fields used within the application.

Variable	Form	Macro	Description
@var(0)	Consist Details leams_transactiondetails	add_SCPV	Assigns the value of Renewal to this variable for onward processing.
@var(1)	Consist Details leams_transactiondetails	accept_child	Assigns the value of the primary asset (tw_rfid) to this variable for onward processing.
@var(3)	Consist Details leams_transactiondetails	datecheck	Contains the asset type of the primary asset to determine if the RFID is valid.
@var(4)	Consist Details leams_transactiondetails	datecheck1	Contains the asset type of the secondary asset to determine if the RFID is valid.
@var(5)	Consist Details leams_transactiondetails	n/a	Count of assets assigned to a renewal.
@var(9)	Edit Consist leams_consistlist	n/a	Used to filter the records based on the renewal value when the user taps the List Details button.
@var(23)	Asset Scan leams_assetscan.vce	n/a	Lookup primary asset status keyed on @var(31)
@var(24)	Asset Scan leams_assetscan.vce	n/a	Lookup primary asset insp_due_date keyed on @var(31)
@var(25)	Asset Scan leams_assetscan.vce	n/a	Lookup primary asset maint_due_date keyed on @var(31)
@var(26)	Asset Scan leams_assetscan.vce	n/a	Lookup asset status keyed on @var(30)
@var(27)	Asset Scan leams_assetscan.vce	n/a	Lookup asset insp_due_date keyed on @var(30)
@var(28)	Asset Scan leams_assetscan.vce	n/a	Lookup asset maint_due_date keyed on @var(30)
@var(30)	Asset Scan leams_assetscan.vce	n/a	Temporary field to enable users to enter an asset number which can be used to lookup asset details.
@var(31)	Asset Scan leams_assetscan.vce	n/a	Temporary field to enable users to enter an asset number which can be used to lookup primary details.
@var(32)	Asset Scan leams_assetscan.vce	datecheck	Used to determine whether the inspection due date (@var(27)) is overdue.
@var(33)	Asset Scan leams_assetscan.vce	datecheck	Used to determine whether the maintenance due date (@var(28)) is overdue.
@var(34)	Asset Scan leams_assetscan.vce	datecheck1	Used to determine whether the primary inspection due date (@var(24)) is overdue.
@var(35)	Asset Scan leams_assetscan.vce	datecheck1	Used to determine whether the primary maintenance due date (@var(25)) is overdue.
@var(36)	Consist Details leams_transactiondetails	n/a	Lookup asset maint_due_date keyed on the primary asset number (tw_rfid)

@var(37)	Consist Details leams_transactiondetails	datecheck	Used to determine whether the primary asset status is set to 'Available'.
@var(38)	Consist Details leams_transactiondetails	n/a	Lookup asset inspection due date keyed on the primary asset number (tw_rfid)
@var(42)	Consist Details leams_transactiondetails	datecheck	Calculated field: (@today-@var(36))/days. Used to determine whether the maintenance due date is overdue.
@var(44)	Consist Details leams_transactiondetails	datecheck	Calculated field: (@today-@var(38))/days. Used to determine whether the inspection due date is overdue.
@var(53)	Edit Consist leams_consistlist	replace	Holds the renewal value for the original asset.
@var(54)	Edit Consist leams_consistlist	replace	Holds the primary asset RFID value for the original asset (tw_rfid).
@var(55)	Edit Consist leams_consistlist	n/a	Holds the secondary asset RFID value for the selected record.
@var(56)	Consist Details leams_transactiondetails	n/a	Lookup asset maint_due_date keyed on the secondary asset number (asset_rfid)
@var(57)	Consist Details leams_transactiondetails	datecheck1	Used to determine whether the secondary asset status is set to 'Available'.
@var(58)	Consist Details leams_transactiondetails	n/a	Lookup asset inspection due date keyed on the secondary asset no. (asset_rfid)
@var(62)	Consist Details leams_transactiondetails	datecheck1	Calculated field: (@today-@var(56))/days. Used to determine whether the maintenance due date is overdue.
@var(64)	Consist Details leams_transactiondetails	datecheck1	Calculated field: (@today-@var(58))/days. Used to determine whether the inspection due date is overdue.
@var(73)	Edit Consist leams_consistlist	n/a	Displays the serial number for the selected secondary asset.
@var(80)	Edit Consist leams_consistlist	datecheck1	Contains the asset type of the secondary asset to determine if the RFID is valid.
@var(81)	Edit Consist leams_consistlist	datecheck1	Used to determine whether the secondary asset status is set to 'Available'.
@var(82)	Edit Consist leams_consistlist	n/a	Lookup asset maint_due_date keyed on the secondary asset number (asset_rfid)
@var(83)	Edit Consist leams_consistlist	n/a	Lookup asset inspection due date keyed on the secondary asset no. (asset_rfid)
@var(84)	Edit Consist leams_consistlist	datecheck1	Calculated field: (@today-@var(82))/days. Used to determine whether the maintenance due date is overdue.
@var(85)	Edit Consist leams_consistlist	datecheck1	Calculated field: (@today-@var(83))/days. Used to determine whether the inspection due date is overdue.
@var(98)	Consist Details leams_transactiondetails	submit / submit1	Sets variable to 1 so renewals form macro *initiate* will change the renewalstatus field to complete and resets variable to 0.

5.3 Synchronisation

Synchronisation between the handheld units and the Access database is controlled using three elements:

OID Field

On every database table within the LEAMS application, the first field is labelled OID. When first created, the field is left blank (zero or null). The Visual CE software uses this field and assigns a unique value when data is first synchronised.

If the data has been generated via the handheld application, the field will be populated at the time Visual CE synchronises with the database.

If the data has been generated via the web application, the field remains blank and the Visual CE software recognises the need to synchronise this data to the handheld units. An OID number is generated for this data during the synchronisation process.

TIMESTAMP Field

On every database table within the LEAMS application, the last field is labelled TIMESTAMP. This field is populated with the current data and time by the desktop application when the user changes the data on the table (adds, amends or deletes). The synchronisation process will check this field to quickly look for any updates that need to be copied to the handheld unit.

Synchronisation Table - SYWARE_SyncInfo

This table provides the control for the synchronisation process. It contains both the OID and TIMESTAMP data for all records within the central database and each handheld unit.

Field Name	Description	Type	Notes
TableName	The table to which the synchronisation refers.	Text	
DeviceName	The id of the handheld device.	Text	
DesktopOID	The OID reference that is held on the central database.	Text	
HandheldOID	The OID reference that is held on the specified device.	Text	
HandheldTimestamp	A timestamp of when the record was synchronised.	Text	

6. Technical Specification – Hardware

6.1 Handheld Device

M3 SKY (MC-7500S)

Operating system:	(OS) Windows Mobile 5.0 and 6.1 Phone Edition
Processor (CPU):	PXA270 624MHz (Optional 520MHz)
Memory RAM:	128MB
ROM:	NAND 256MB
Expansion Slot:	MiniSD Card
Scanner Type:	1D Laser
Colour Camera:	Spec - 2.0M Auto Focus Flash - LED flash
WWAN:	Radio - GSM/HSDPA Frequency Band - 850/900/1800/1900/2100MHz
WLAN:	IEEE 802.11 a/b/g
WPAN:	Bluetooth - V1.2 Class II IrDA - V1.2
GPS:	SiRF III
Display:	Size - 3.5" TFT-LCD Colour - 260k colour Type - Backlight LED type
Keypad:	Numeric
Dimensions (W x H x D):	78.6 x 163.5 x 24.9 mm
Weight:	320g (Including standard battery)
Battery:	Rechargeable Li-ion 2,200mA/h
Drop specification:	1.5m drop to steel surface, 2 drops per 6 sides, meets and exceeds MIL-STD 810F, Method 516.5
Humidity:	MIL-STD 810F, Method 507.4, 95%RH temp cycle 20°/60°
Temperature:	Operating: -20° to 60° D24+D24/ -4° to 140° Storage: -30° to 70° / -22° to 158°
Rain/dust protection:	IP65
Vibration:	MIL-STD 810F, Method 514.5
Temp Shock:	MIL-STD 810F, Method 503.4 (-35°C/65°C)
Immersion:	MIL-STD 810F, Method 512.4
RFID:	13.56MHz / ISO 14443A/B, ISO 15693
Accessories:	Single Slot Cradle, Single Slot Ethernet Cradle, Four Slot Ethernet Cradle, Four Slot Cradle, Car Cradle, Standard Battery(Li-ion 2,200mA/h), Battery(Li-ion 4,000mA/h), AC Cord, Adaptor, AC Cord, Adaptor, USB Cable Snap On, Stylus Pen, Ear-Phone, Charging Holster.

6.2 RF Tags

iDTRONIC On Metal black 35mm IcodeSLI

iDTRONIC On-metal Tags are passive transponders. They have an integrated ferrite shielding, which minimizes the effect of metal surfaces and are designed for the identification of goods and objects in metal applications..

iDTRONIC On-metal Tags use 13,56MHz technology.

Dimensions:	35 x 4mm with 5mm hole
Antenna type:	Wired
Material:	ABS
Metal layer:	Ferrite 0,7mm
IC type:	NXP I-Code SLI (1024bit) EM4100 (125kHz Read Only!)
Reading distance:	Up to 6cm
Application temp.:	- 40°C to 60°C